

THE FERNS OF BRITISH INDIA

BEING FIGURES AND DESCRIPTIONS OF FERNS FROM
ALL PARTS OF BRITISH INDIA

(*Inclusively of those found in The Ferns of Southern India and Ceylon*)

BY
MAJOR R. H. BEDDOME

OFFICiating CONSERVATOR OF FORESTS

VOL. I

MADRAS GANIZ BROTHERS
LONDON J. VAN VOORST

1868

• •
POLYPODIF 4

Lens tree

NOTHOCHLANA h Brown Prod Fl N Holl 14,

(Cimicidium Desviers — Argyrochosma 1 Sm — Liochosma J Sm — Lepicosma J Sm —)

Gen char Sori non indusiate small rotundate oligocarpous contiguous becoming laterally confluent into a narrow line or border the receptacle terminal veins simple or forked from a central costa Venules fine

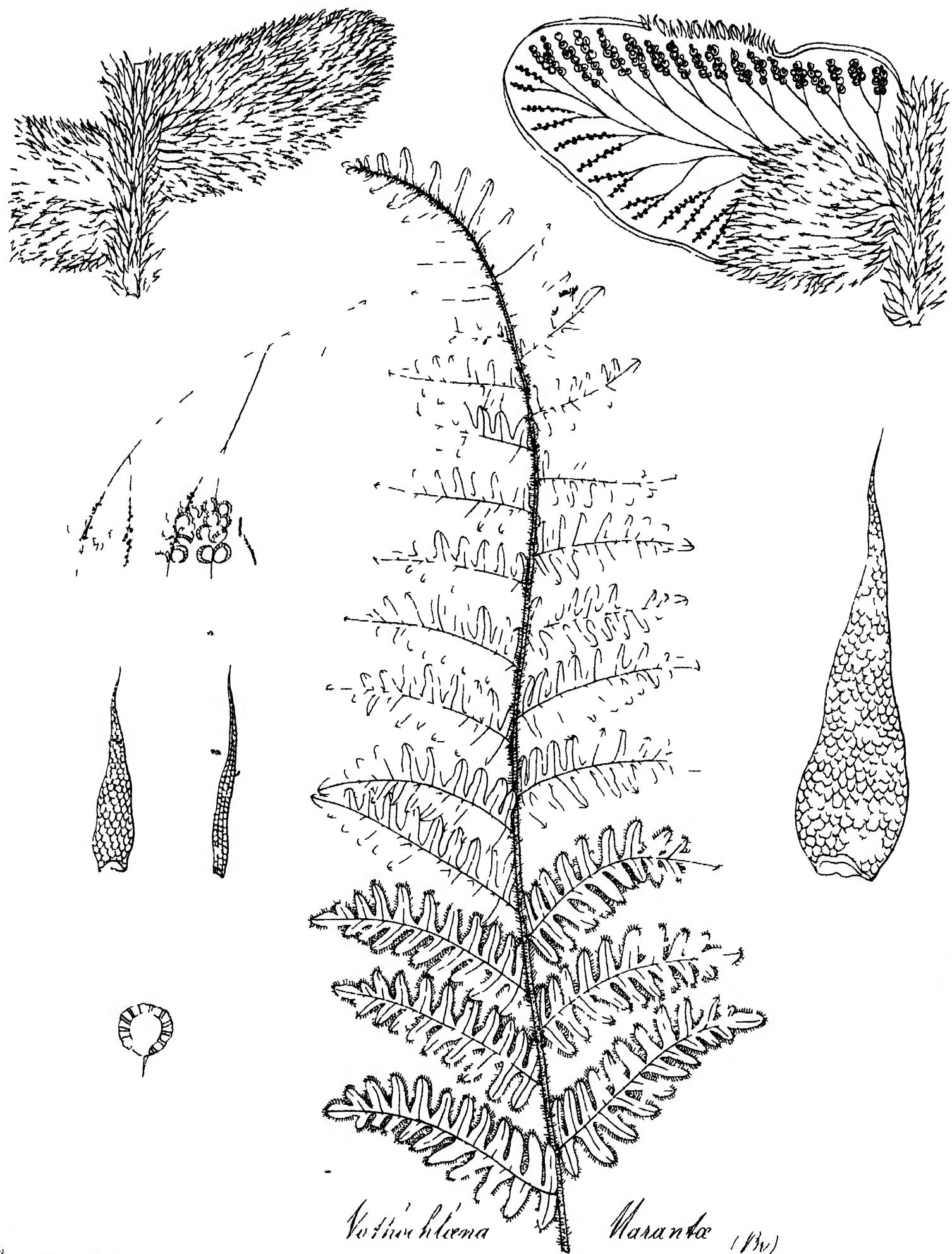
Fronds pinnate bi tri pinnate the margins sometimes with a tendency to become revolute and indusiate Rhizome short erect or decumbent A genus with the habit of Cheilanthes but without an indusium (Moore)

1 NOTHOCHLANA MARANTÆ (Br) Caudex a stout horizontal rhizome densely pubescent with soft silky ferruginous finely pointed subulate scales stipites generally stout purplish black 3 6 inches long, aggregated setosely and densely hirsute as well as the rachis fronds 4 , 10 inches long 2 1/2 inches wide oblongo lanceolate carnosus coriaceous fibrous above beneath densely clothed with ferruginous oblongo lanceolate imbricated scales bi pinnate primary pinnae petiolate or sessile from a broadish obtuse base oblongo acuminate pinnules not numerous approximate sessile 2 3 lines long very obtuse entire, upper ones confluent at the base (as are the terminal primary pinnae) the edge scarcely reflexed sori forming a broad border extending some way from the margin towards the costule much concealed by the paleaceous covering —Holl Sp Fl v 120 —Br Prod N v Holl p 146 —Dev Webb Fl Canar iii p 405 —N subcordata Desv —Acrostichum Marantæ Inn Sp Pl p 1527 —Schk Fl t 4 —Sw Syn Fl p 14 —Willd Sp Fl v p 122 —Sibth Fl G v 964 —Guterich De Cand —Gymnogramma Metten —A Canariense Willd Sp Pl v p 121

The specimen figured is from near Simla

Hab South of Europe N Africa and adjacent islands Abyssinia N W India Kumaon, Kumdari Simla Sikkim Bhotan

PLATE No 1



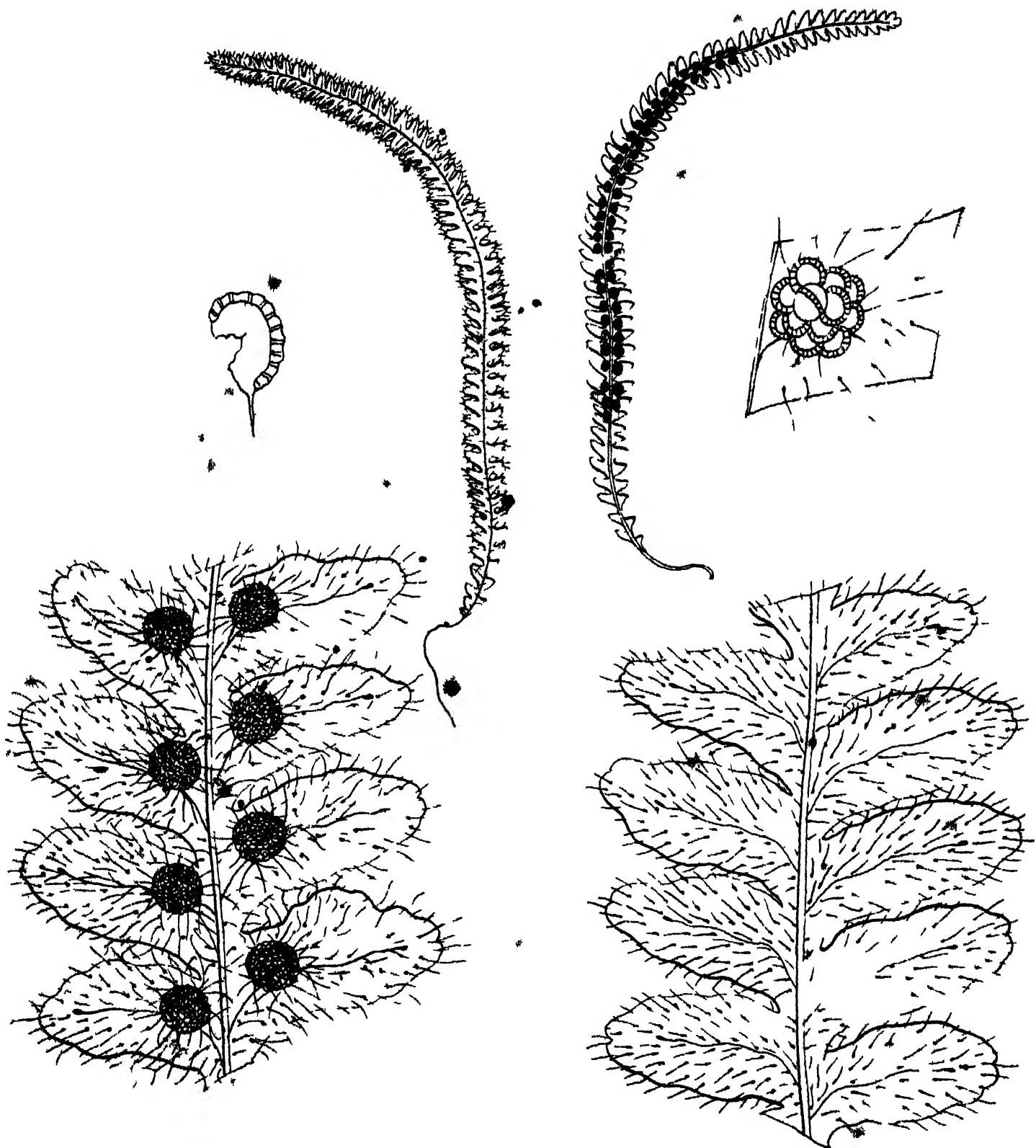
POLYPODIUM (See Ferns of S India p 54)

1 POLYPODIUM TRICHOMANOIDES (Sw) Caudex short erect paleaceous above densely rooting with wiry fibres stipites short 4-1 inch long densely tufted patent villous with long fibrous hairs fronds 3-4 inches to a span long 2-4 lines wide rigid membranaceous, linear attenuated at both extremities deeply nearly to the costa pinnatifid or almost pinnate (quite so at the very base) lobes horizontally patent from a broad base ovate or oblong entire sub concave beneath sub-deciduously ciliated with long fibrous or blackish patent hairs veins solitary in each lobe simple or forked each lobe having a single sorus near the costa.—*Hook Sp Fil* iv 178,—*Su Syn Fil* p 184 —*l gibbosum* *Fee* —*l Serricula* *Fee* —*P nanum* *Fee* —*P sertularioides* *J Sm in Hook Journ of Bot* iii 394

The specimen figured is from the Sikkim Himalaya (Dr Thomson)

Hab Tropical America from Brazil and Guiana to the Pacific and the Islands—Malacca Lachen, Sikkim—Himalaya, Islands of Ascension ?

PLATE No II



Polypodium trichomanoides
(L.) Sw.

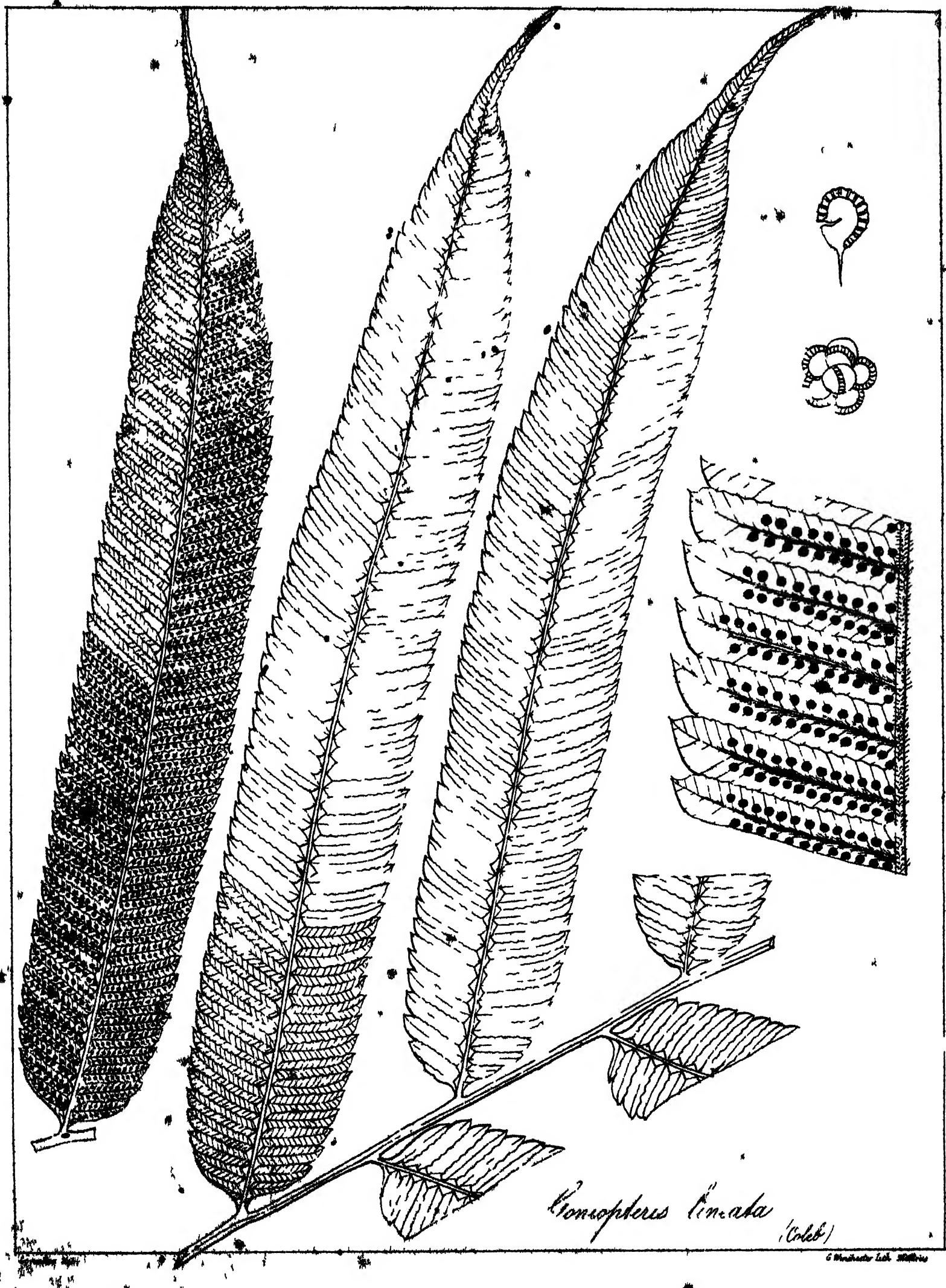
GONIOPTERIS (See Ferns of S India p 57)

1 GONIOPTERIS LINEATA (Colb) Stipes 1½ foot and more long rather stout scaleless glossy and as well as the rachis strongly tinged with red (rarely stramineous) fronds 1 2 3 feet long broad oblong or lanceolate coriaceous submembranaceous pinnatifid glaucous pinnae numerous rather distant patent sessile 5 8 inches long 1 an inch or little more broad (on sterile fronds sometimes exceeding an inch) from an obliquely cuneato truncate sessile base, (lower ones rather more attenuated and subpetiolate) lanceolate or elongato oblong finely acuminate at the apex the margin coarsely and sharply submucronato serrated serratures pointing a little forward uniform costæ prominent beneath of the same colour as the rachis and stipes generally reddish veinlets about 8 14 pairs often alternate of which all are connivent except 2 3 short pairs in the teeth of the serratures sori in 2 series on the middle of the veinlets — Hook Sp Fil v 12 — Colebr in Herb Wall and Wall Cat n 300 — P costatum, Wall Herb (not Goniopteris costata of Brack)

The specimen figured is from Birmah (Captain the Honorable J. Dormer)

Hab Nepal, Kumaon, Simla, Nimblow, Silhet, Mishmee, Ceylon?

PLATE No III



Konopodera limata
(Coleb.)

G. W. Hooker Lich. 2000

POLYPODIEA

xx Veins reticulated without free included veinlets

DICTYOPTERIS Presl Tent Pierid 194

(*Dictymia* J. Smith — *Polypodium* sp. *Auct.* — *Drynaria* sp. *Fee* — *Aspidium* sp. *Blume* — *Phegopteris* sp. *Mettenius*)

On chart Sori non indusiate globose or oblong compital i.e. the receptacles uniting several radiating reticulated veinlets or medial Veins uniformly reticulated (or sub pinnately branched) from a central costa the areoles elongated oblique without free included veinlets

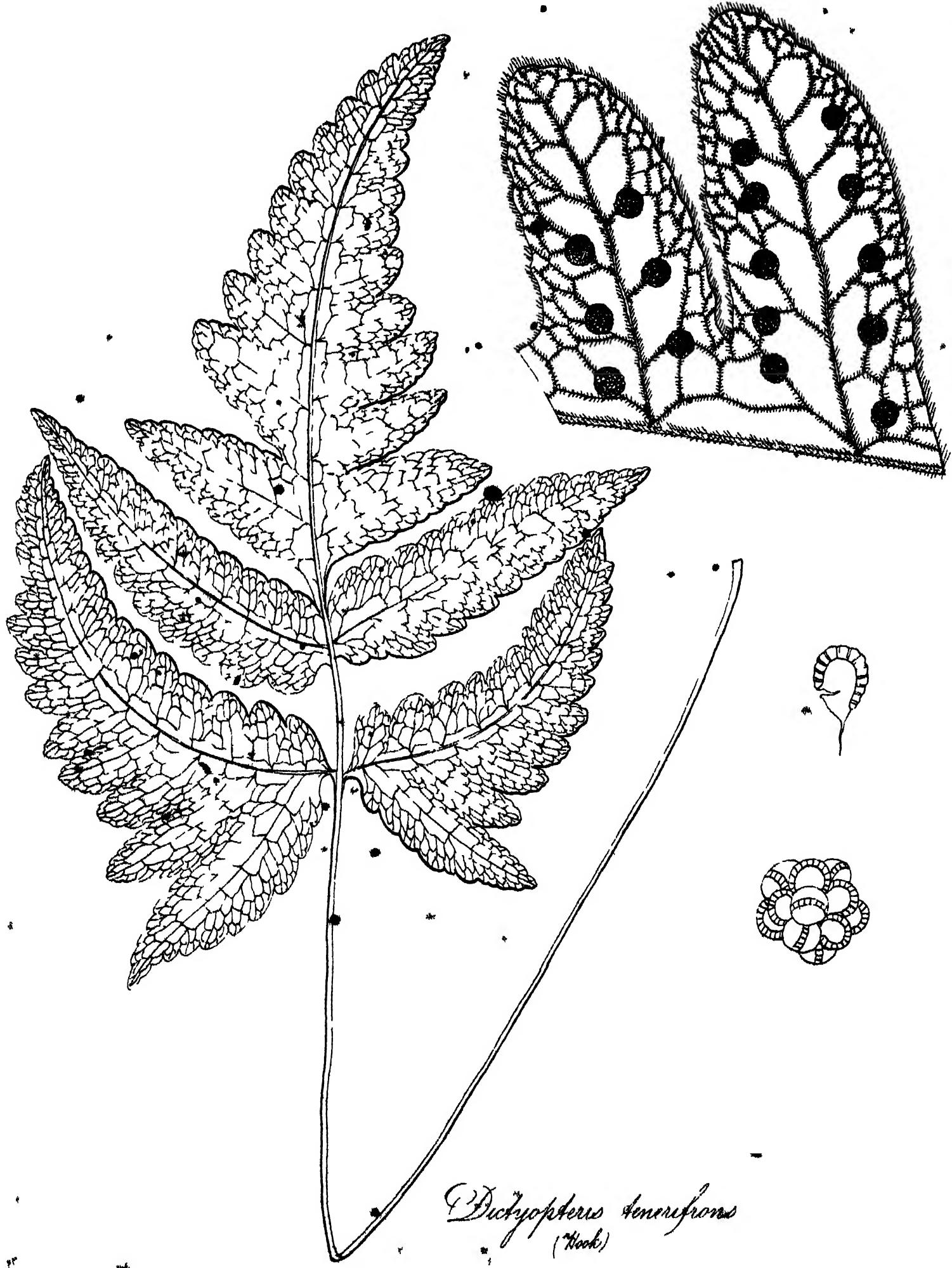
Fronds coriaceous or sub coriaceous simple or bi pinnate Sori sometimes marginally serial Rhizome creeping (? always)
The nearly uniform venation without included free veinlets distinguishes this genus (Moore)

1 DICTYOPTERIS TIPNERIFRONS (Hook.) Caudex small creeping underground scaleless with very few radicles stipites few remote slender glossy stramineous the base very tomentose with a few sparse scales partly subterraneous attached to the rhizome by a small point fronds thin membranaceous pale green glabrous subpuberulous on the veins 6-9 inches long quite as broad as long cordate deltoid subcinate or pinnated with 3-9 sub falcate pinnae lateral ones nearly opposite petiolate lowest pair half ovate acuminate 4-6 inches long lobato pinnatifid those of the superior margin with broad ovate nearly basal subdenticulate blunt lobes the inferior ones much elongated and acuminate the basal ones again lobato pinnatifid intermediate pinnae ovato lanceolate pinnatifid terminal pinna long petiolate broad ovate acuminate deeply pinnatifid especially at the base veinlets uniformly reticulated areoles with no included free veinlets costular areoles large sori rather irregularly scattered dorsal or compital Hook Sp Fil v 104

The specimen figured is from Moulmein (Rev C. S. I. Parish)

Hab. W. Trop Africa, Luzon, Moulmein

PLATE No IV



Dicksonia tenerrima
(Hook)

POLYPODIEAE

Leaves articulated with free included veinlets

Free veinlets excurrent

GONIOPHLEBIUM Blume Fl Jap 132

(*Marginaria* *P. sl* (non *Bory*) — *Synamia* *Prest* in part — *Pleurogonium* *Prest* — *Lepicystis* *J. Smith* in part — *Lopholepis* *J. Smith* — *Schellolepis* *J. Smith* — *Cypinus* *Prest* — *Crepidaria* *Sink* in part *Fe* — *Polypodium* *sp* *Auct* — *Crammitidium* *sp* *Decau* — *Campyloneurus* *sp* *Auct* — *Acrostichum* *sp* *Langsdorff et Fischer* — *Mesosori* *sp* *Klotzsch*)

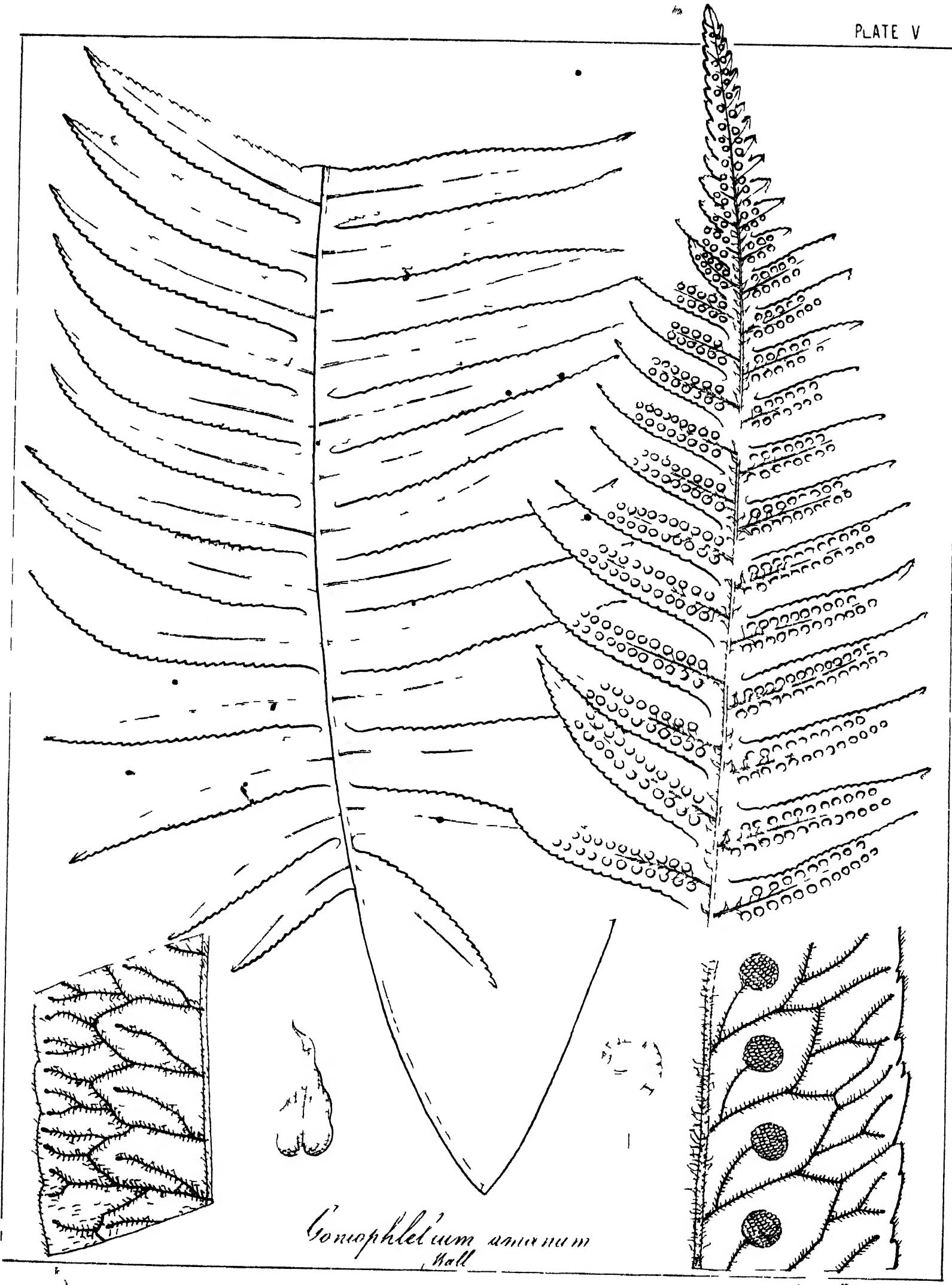
Gen char. Sori non indurate globose (rarely oblong) the rec pustules punctiform (rarely oblong) situated at the apex of the lower anterior veinlets or of the simple excurrent free veinlets one being included within each areole. Veins forked or pinnate from a central costa the lower and upper veinlets usually free and fertile the rest angularly or arcuately anastomosing (in one or more frequently several series) and producing from their angles free excurrent veinlets which are often fertile the marginal veinlets free.

Fronds simple pinnatifid or pinnate herbaceous or coriaceous sometimes scaly the fertile often much narrower than transversely unisexual or terminal sometimes squamiferous Rhizome creeping the fronds articulated (Moore)

1 *GONIOPHLEBIUM AMÆNUM* (Wall) (rhizome creeping densely paleaceous with ferruginous tubercles stipitate a span to a foot or more long stramineous or brown fronds 1 to nearly 2 feet long 6-10 inches wide glabrous or pubescent ovate terminating in a lanceolate acuminate sub entire segment, deeply pinnatifid to within 2-3 lines of the costa, segments horizontal more or less approximate 3-6-8 inches long $\frac{1}{2}$ an inch wide sub lanceolate from a broad base ensiform gradually acuminate entire or coarsely dentato serrate lowest pair deflexed veins forming one costal series of moderately sized soriferous areoles and sometimes two (the second not soriferous) marginal veinlets free soriferous veinlet always rising from the vein at a distance from the costa on sub globose sunk (papillose on the upper side) — *Hook Sp Fl v 24* — *Wall Cat n 290* — *Metten Polyp p 80* — *Marginalia* *l.* — *Goniophlebiun* *J. Sm*

The specimen figured is from Dalhousie (Captain Dyas)

Hab. Nepal Khasya Bhotan Kumaon (alt 6000 to 10000 feet) Mussoorie Dalhousie

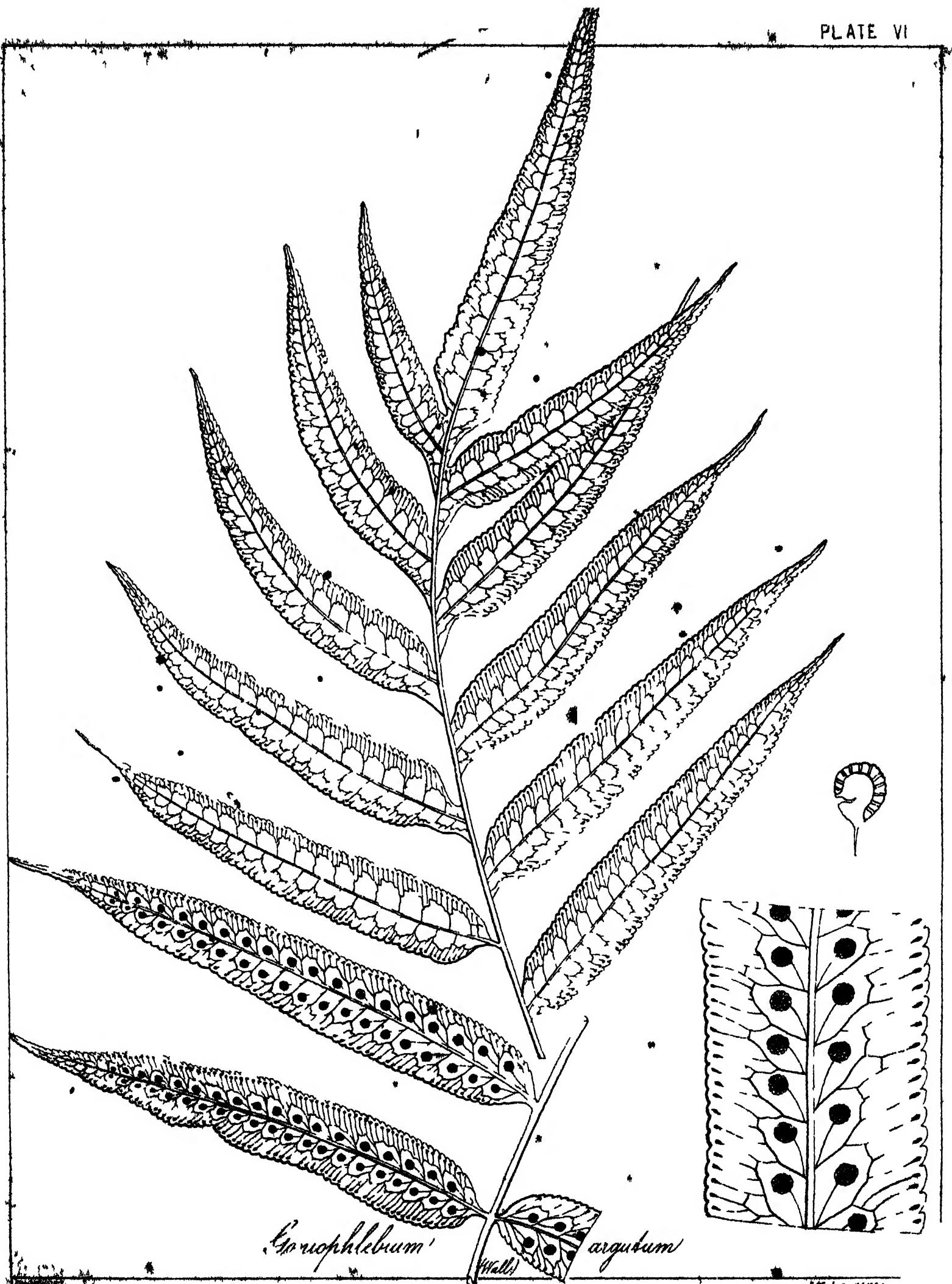


2 *GONIOPHLLBIUM ARGUTUM* (Wall) Caudex thick as a writing quill squarrose with subulate blackish or brownish glossy scales, stipites 3 1/2 inches to a span long testaceous brown glossy fronds firm membranaceous glabrous 1 1/2 feet long 8 10 inches broad pinnated pinnae distant sub horizontally patent 1 6 inches long $\frac{1}{2}$ - $\frac{3}{4}$ inch wide from a broader but obtusely and oblique cuneated or sub truncated base (rarely rotundato auricled) elongato oblong acuminate rather obtusely serrated, lower ones often opposite the rest alternate superior ones more or less undulate and decurrent, terminal one similar to the rest, veins forming a costal series of large oblong soriferous areoles marginal veins ending in a thickened apex within the margin all free sori orbicular, superficial at the apex of the free veins in the costal areoles Hook Sp Fil v 32 Wall Cat n 308

The specimen figured is from Nynee Tal (Mr Oldham)

Hab Nepal, Kumaon, Nynee Tal, Sikkim, Khasya Gowhatta Plains

PLATE No VI



PLEOPELTIS (See Ferns of Southern India p 77

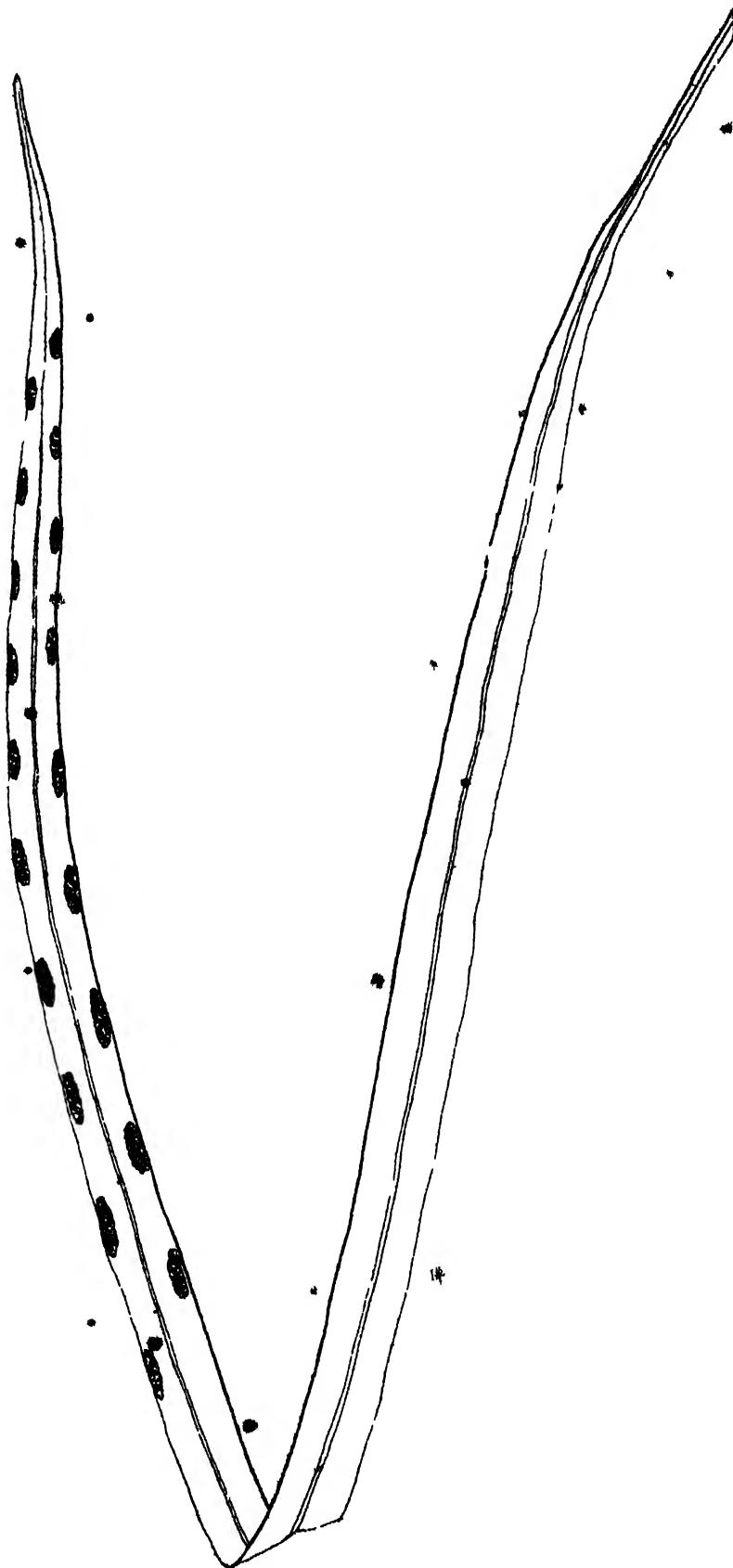
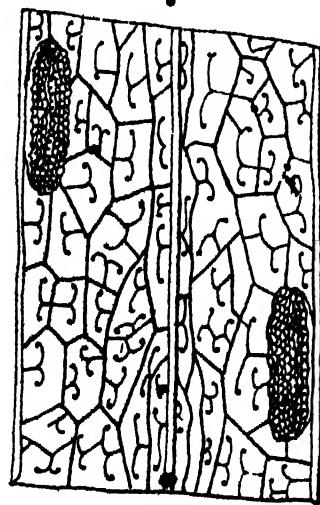
1 PLEOPELTIS LONGIFOLIA (Metten) Caudex horizontal creeping thick squamose, stipites approximate 2 3 inches long fronds 1 2 3 feet long $\frac{1}{2}$ 1 $\frac{1}{2}$ inch wide thick carnosus coriaceous glabrous linear lanceolate obtusely acuminate gradually long attenuated below on the stipes entire the margins sub revolute venation internal very indistinct costules veniform united by transverse veins into rather large areoles then into irregular lesser ones which include free veinlets sori compital oblong forming a line or series near the margin rather close placed, sunk into the substance of the frond and forming a corresponding elevated line on the upper surface capsules mixed with long stipitate scales—*Hook Sp Fil* v 60—*Metten Polyp* p 87—*Grammitis longifolia Bl En Fil Jai* p 119 and *Pleopeltis in Add and Gr decurrents and Pleopeltis decurrents Bl ll cc*—*Polyp contiguum Wall n 280 t—Hook Ic Il x t 987* (or *Cent of Ferns t 87*) *Fil Erot t 20*,—*Phymatodes and Drynaria revoluta J Sm*—*Paragrammitis Blume and Moore Ind Fil xxxii*

Mr Moore adopts Blume's former name and places this fern amongst the Tectariaceæ with which it certainly has some affinity

The specimen figured is from Moulmein (Rev C S P Larrish)

Hab Malay Islands and Peninsula, Java, Lirmah Luzon Singapore, Mergui

PLATE No VII



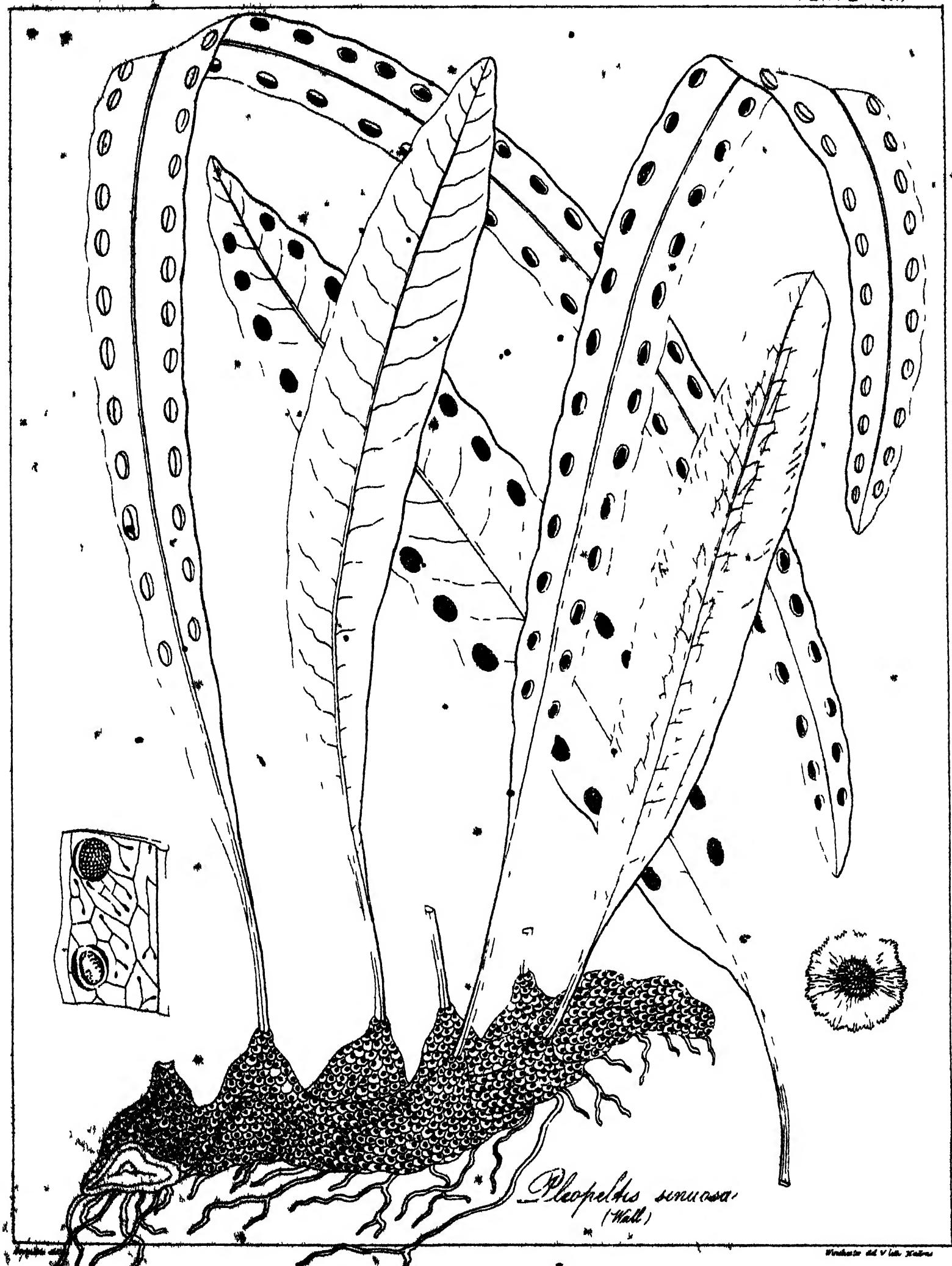
Pleopeltis longifolia
(Mett.)

2 PLEOPTLTIS SINUOSA (Will.) Caudex much branched long creeping or scandent on trees, sparingly radiculose } an inch to 2 inches thick almost woody when dry probably carnose when recent studded as it were with large conical processes upon which the stipites are or have been articulated and which appear to increase much in size after the fronds have fallen the whole densely covered (as it were tessellated) with nearly orbicular appressed whitish peltate scales with a dark spot in the centre, stipites 1 2 inches long glabrous and scaleless fronds sub dimorphous sub coriaceous membranaceous glabrous sterile ones 3 6 7 inches long } 1 inch broad sub elliptical, oblong obtuse entire, fertile ones longer sometimes a foot 16 inches long & } of an inch wide linear elongato oblong obtuse the margins more or less sinuated the base in both attenuato decurrent venation copious anastomosing forming large very irregular areoles filled with lesser ones (formed by more slender veins) and these include branched or simple veinlets which occasionally again anastomose sori remote large oblong immersed in a cavity which forms pustules on the upper side arranged in a single series nearer the margin than the costa — *Hook Sp Fil v 61, — Wall Cat n 2231*

The figure is taken from Sir W Hooker's *Icones Filicium*

Hab Straits of Malacca, Amboyna, Isle of Jobi, New Hebrides Java Mergui Birmah

PLATE No VIII

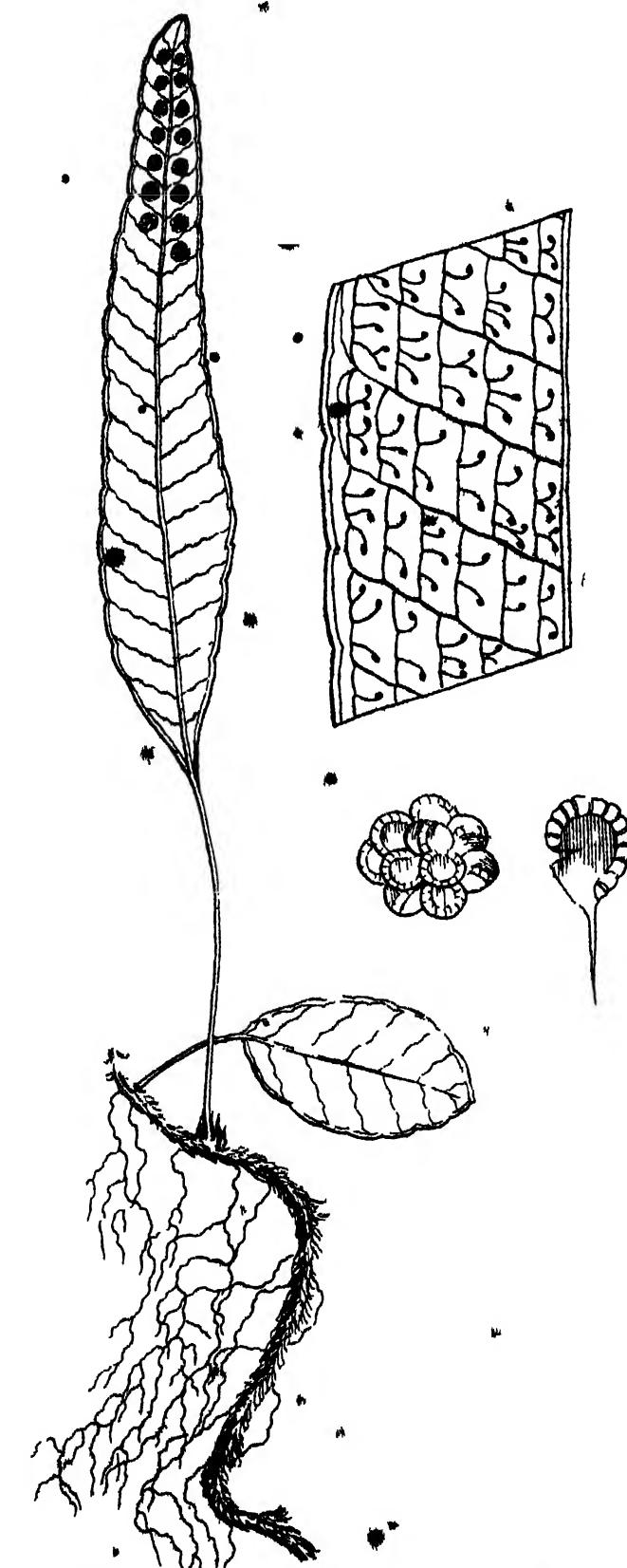


3 PLEOPELTIS RHYNCOPHYLLA (Hook) Caudex creeping slender paleaceous, sub squarrose with subulate ferruginous scales, stipites scattered, slender 1 2 inches long of the *sterile* frond 2 1/2 of the *fertile* one fronds firm chartaceous membranaceous glossy, slightly thickened, remotely crenate, *sterile* ones 1 2 inches long elliptical or sub ovate obtuse *fertile* ones 3 6 inches long lanceolate from near the base, gradually and long-acuminated below cuneato attenuated venation distinct slightly prominent, the costules are connected by transverse veins forming areoles which enclose free veinlets which latter sometimes unite with opposite veins the sori are mostly confined to the narrow acuminate apex and when mature are very large in a single series on each side of the costa — *Hook 5, Fil v 6*, — *Hook 1c Plant 955 (or t 55 of Cent of Ferns)*

The specimen figured is from Birmah (Rev C S P Parish)

Hab Assam, Khasya, (alt 4,000 feet), Birmah

PLATE No 11



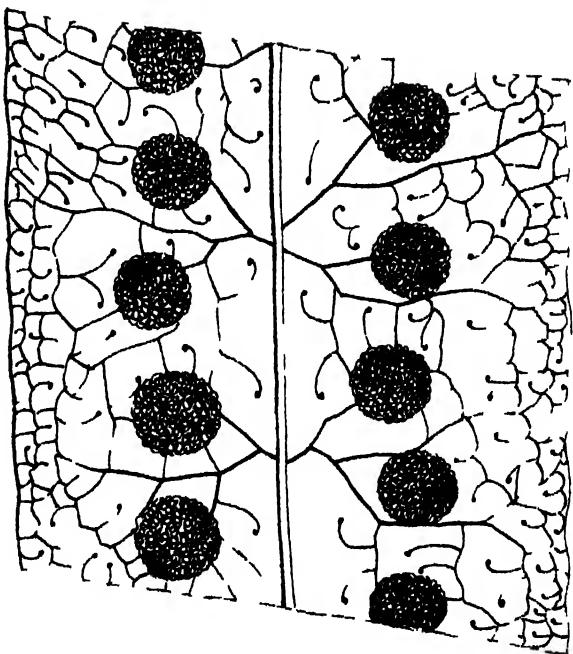
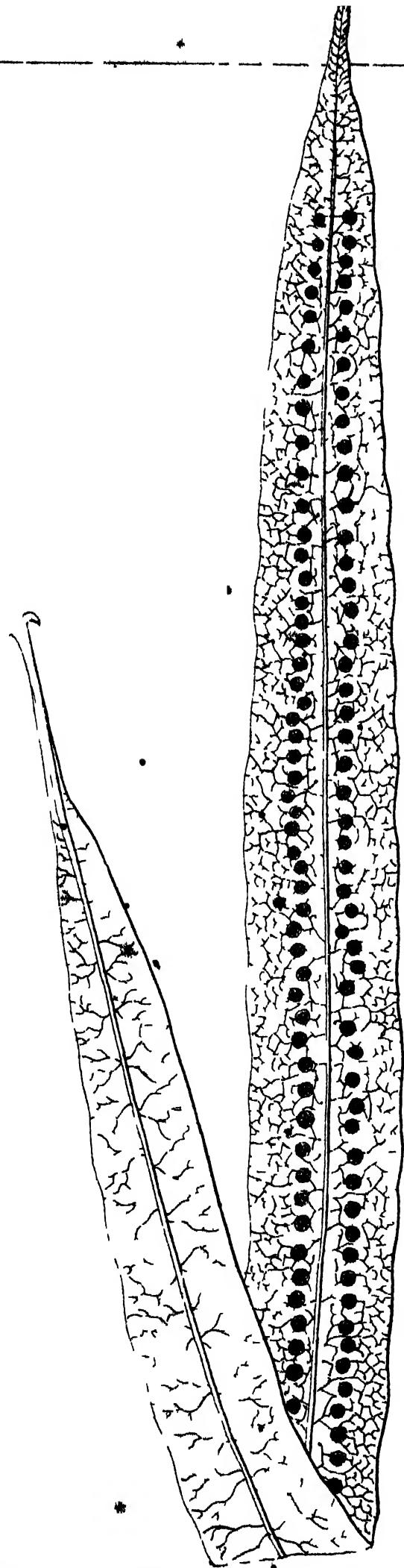
Pleopeltis rhyncophylla
(Hook.)

4 **PLGOPTIS NORMALIS** (Don) Caudex very long creeping or scandent often as thick as a writing pen, the young portions clothed with black subulate to conical squarrose scales in age perfectly smooth stipites very numerous on the caudex, more or less approximate 1 2 inches long and as well as the costa reddish stramineous fronds thin membranaceous glabrous varying extremely in sizes 1 2 feet or more long $\frac{1}{2}$ of an inch to 2 inches wide lanceolate or elongato lanceolate or loriciform, generally long and finely acuminate gradually attenuated and decurrent at the base entire subulate or flexuous venation slightly prominent especially beneath costules none in us forming rather large but very irregular areoles with free included veinlets sori mostly compitit rather large arranged in a single regular series nearer the costa than to the margin or in a waved line partially scattered or very copious and irregularly dispersed over the whole under surface of the frond — *Hook Sp Fil* v 69 — *Metten Polyp* p 86, t 1 f 41 43 — Var α *normalis* frond 1 $1\frac{1}{2}$ foot long $\frac{1}{2}$ an inch to 1 inch wide — *Polypod. normale* *Don Prod. Nep* p 1, — *Phymatodes Pr* — *Drynaria, J Sm* — Var β *latifrons* fronds 1 $1\frac{1}{2}$ foot long 1 2 inches wide sori regularly uniserial — Var γ *sparsiora* fronds 2 3 feet long $\frac{1}{2}$ 1 inch wide sori irregularly scattered and copious — P longifrons *Wall Cat* n 274, — *Hook and Gray Ic Fil* t 65 — *Drynaria, Fee* *

The specimen figured is from Moulmein (Rev C S P Iarish)

Hab Var α and γ Nepal Khasi Assam (alt 4 000 feet) Var β Malacca, Moulmein (alt 4 000 feet) Chun, Formosa

PLATE No 3

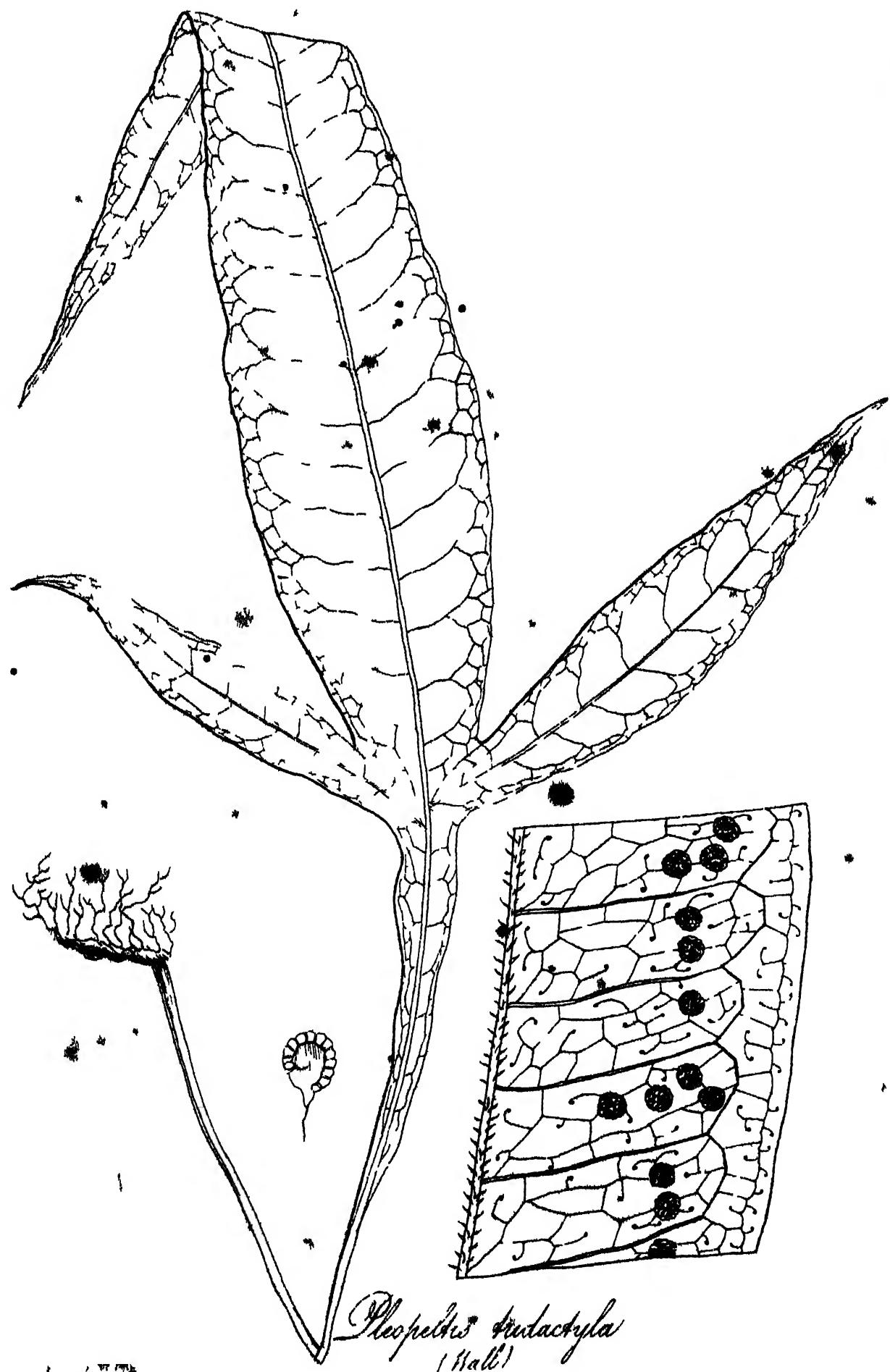


Pteropeltis normalis
(Linn.)

, **PLEOPLLTIS TRIDACTYL\ (Wall)** {Vide *Ferns of S India* p. 60}

The plant here figured is from Burmah (Captain the Honorable J. Dormer) and seem distinct from the small S Indian species figured in 'The Ferns of S India'. It is undoubtedly Wallich's species so that the S Indian and Ceylon fern if distinct will have to receive another name

PLATE No. XI



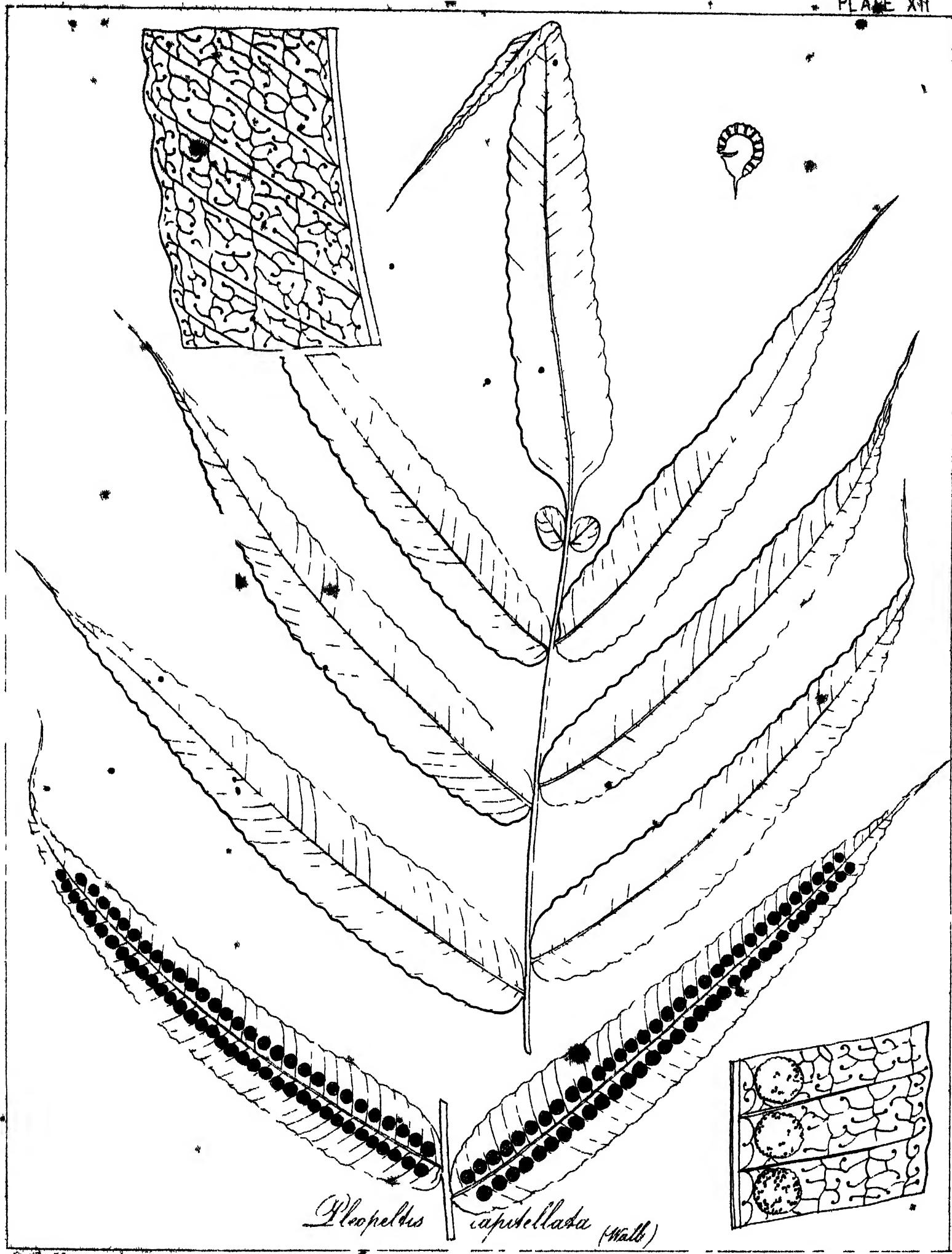
Pteropeltis undulata
(Hall)

C *PIFOPPTIS CAPITILATA* (Will.) Caudex creeping furnished with hair like ovate or lanceolate scales up to 1 foot and more long, fronds 1-2 feet long membranous or coriaceous membranous glabrous ovate oblong pinnated (young fronds often simple) pinn 1 to 21 pairs opposite or alternate articulated on the rachis sessile or more or less petiolate 5-9 inches long, $\frac{1}{2}$ to 2 inches broad, obtuse at the base finely acuminate at the apex (often with a distinct membranous margin) entire or slightly sinuate lobate or crenate straight extending to the margin these are connected by transverse veins with 3-4 series of areoles again divided into lesser areoles including free divaricating veinlets sori large superficial in a single series near the costa or 1-2 in the primary areoles — *Wall Cut* 306 *Phymatodes capillata* — *Hook Sp Fil* v 90 — *Hymatodes tenuicauda* *Hook* l c, — *Phy Himalayensis*, *Hook* l c 91 — *Polyp juglandifolium* *Don* — *Polyp venustum*, *Wall* c 305 (not Desv.)

The specimen figured is from Nynce Tal (Mr Oldham)

Hab Nepal, Bhotan, Sikkim, Khasya, Assam, Kumaon (7,000 ft) Srinuggur, Simla Nynce Tal

PLATE No XII



Phleopeltis *capitellata* (Wall.)

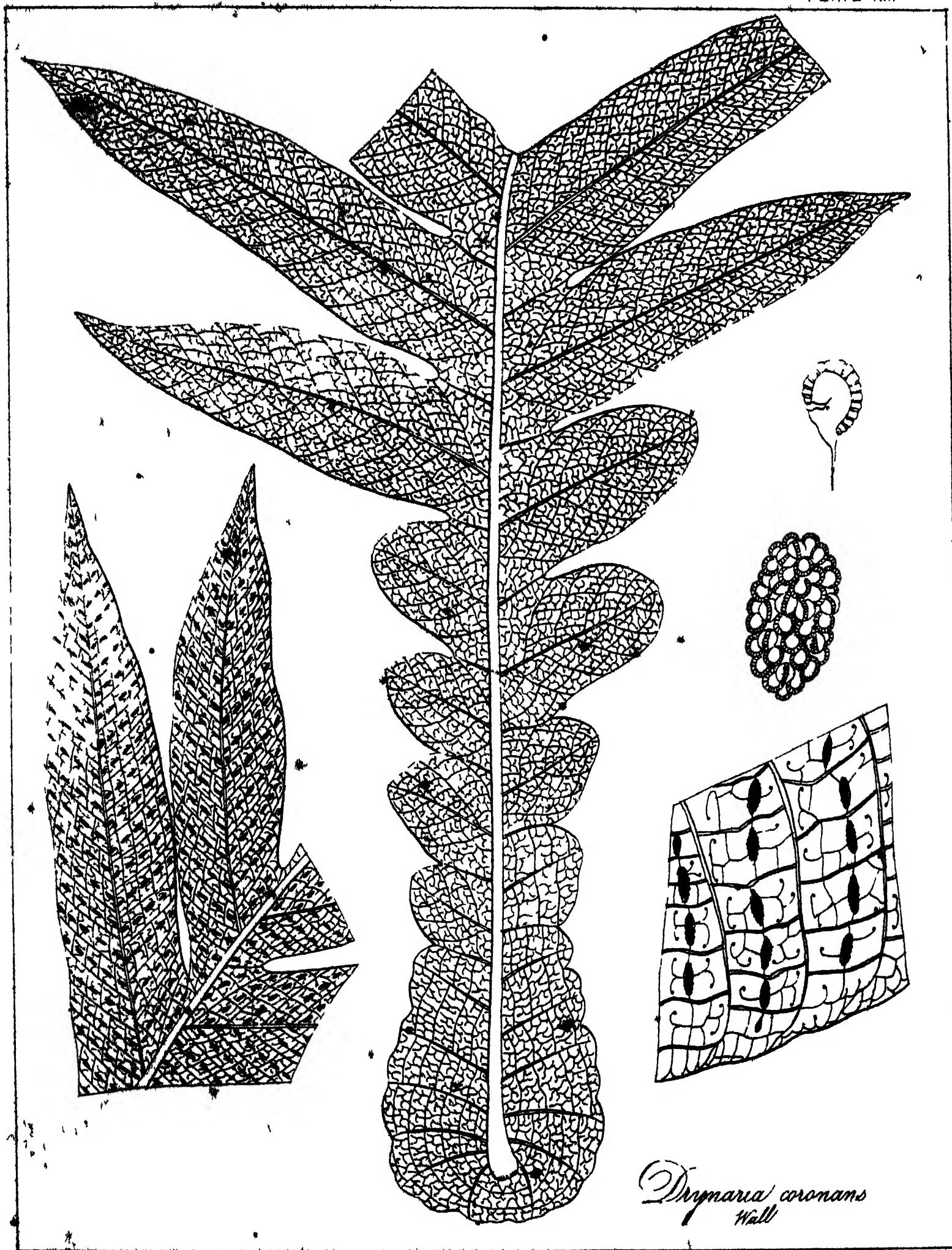
DRYNARIA (See Ferns of S India p 63)

1 DRYNARIA CORONATA (Wall.) Caudex thick creeping branched and interwoven villosa paleaceous with numerous minute scales rhombic large uniform when growing arranged in a circle firm coriaceous membranaceous but rather thin and translucent 2 and more feet long from a broad sessile cordate lobato pinnatifid base (then suddenly contracted) lanceolate deeply almost to the base pinnatifid segments 8-12 inches long 2 to 1 inch and more wide oblongo lanceolate acuminate lower ones gradually shorter entire incised at the margin, venation very manifest costules parallel extending to the margin these are connected by transverse veins forming 5-6 soriferous areoles and then again generally two or three others which include free veinlets sori oval often confluent longitudinally solitary in the primary areoles forming an eccentric series always nearer one costule than the opposite one — *Hook S. Fil* v 91 — *Wall Cat* n 288 — *Metten Polyp* p 121 & 40-41 (synonym) — *Hook J. d. Exot* & 91 — *Phymatodes P.* — *Drynaria J. Sm*, — Var β sori of the series confluent, — *Polyp contiguum*, *Wall in Herb Hook* (not *Cat* n 285)

The specimen figured is from Moulmein (Capt the Honorable J. Dormer)

Hab. Nepaul, Kumaon, Assam, Sikkim, Khasya Mishme Moulmein, Hongkong

PLATE No. VIII



Drymaria coronans
Wall

- PFRANEMEA

WOODSIA *h. Brown Trans Lin Soc xi 1, 3 t u*

Physematium *Kaulfuss* — *Hymenocystis* *C A Meyer* — *Hymenoloma* *C A Meyer* — *Pomaria* *Hooker* — *Polypodium* sp., *Auct* — *Asplenium* sp *Auct* — *Alsoptilium* sp *Auct* — *Dicksonia* sp *Auct* — *Cystopteris* sp *Auct* — *Lastraea* sp *Prest* — *Acrostichum* sp *Auct* — *Ceterachis* sp *Auct* — *Nothochloma* sp *Desvaux*)

(on Char. Sori involuciate & e with inferior indusia globose the receptacles medial or terminal. Involucres soft membranaceous pateriform and fimbriately crenate or calyciform with the margin lobed or sub globose with a contracted mouth veins simple forked or pinnato, from a central costa venules free

1 round membranaceous herbaceous small pinnule pinnatifid or bi pinnate Rhizome tufted erect or decumbent A very well marked group distinguished by the involucriform nature of the indusium the sessile sori and free veins (Moore)

1 **WOODSIA LLONGATA** (Hook) Glanduloso pilose especially above fronds oblong elongate pinnated pinna rachis & rachidi alternate sessile from a broadish base oblong obtuse pinnatifid about $\frac{1}{2}$ way down segments short rounded inciso dentate each bearing a sorus (rarely more) near the sinus involucres small soon bursting with an irregular opening at the top glanduloso pilose stipes and rachis slightly chaffy

The specimen figured is from the Himalayas (Dr Thomson)

Hab. Himalayas, Krande

PLATE No XIV



Woodia elongata
(Hooker)

DIDYMOCHLINA

DIDYMOCHLINA Desv Bot Mag v 30 t 7 p 6

(*Monochlaena Gaudichaud* —*Hippodium Gaudichaud* ms —*Ceratium Reinwardt* —*Tegularia Reinwardt* —*Hystero*
zanthus *Long* *MS* —*Diplazium Raddi* —*Aspidium p. Auct* —*Asplenium sp. Auct* —*Adiantum sp. Auct*)

Conchus semiundulate elliptic oblong the receptacle oblong dorsal at the apex of the venules. *Indusium* of the same form obtuse at both ends attached longitudinally along its centre to a crest formed elevation of the receptacle free at the margins. Veins obliquely forked *anulus* direct free the interior one in each lobe soriferous the sterile ones clavate at the apex.

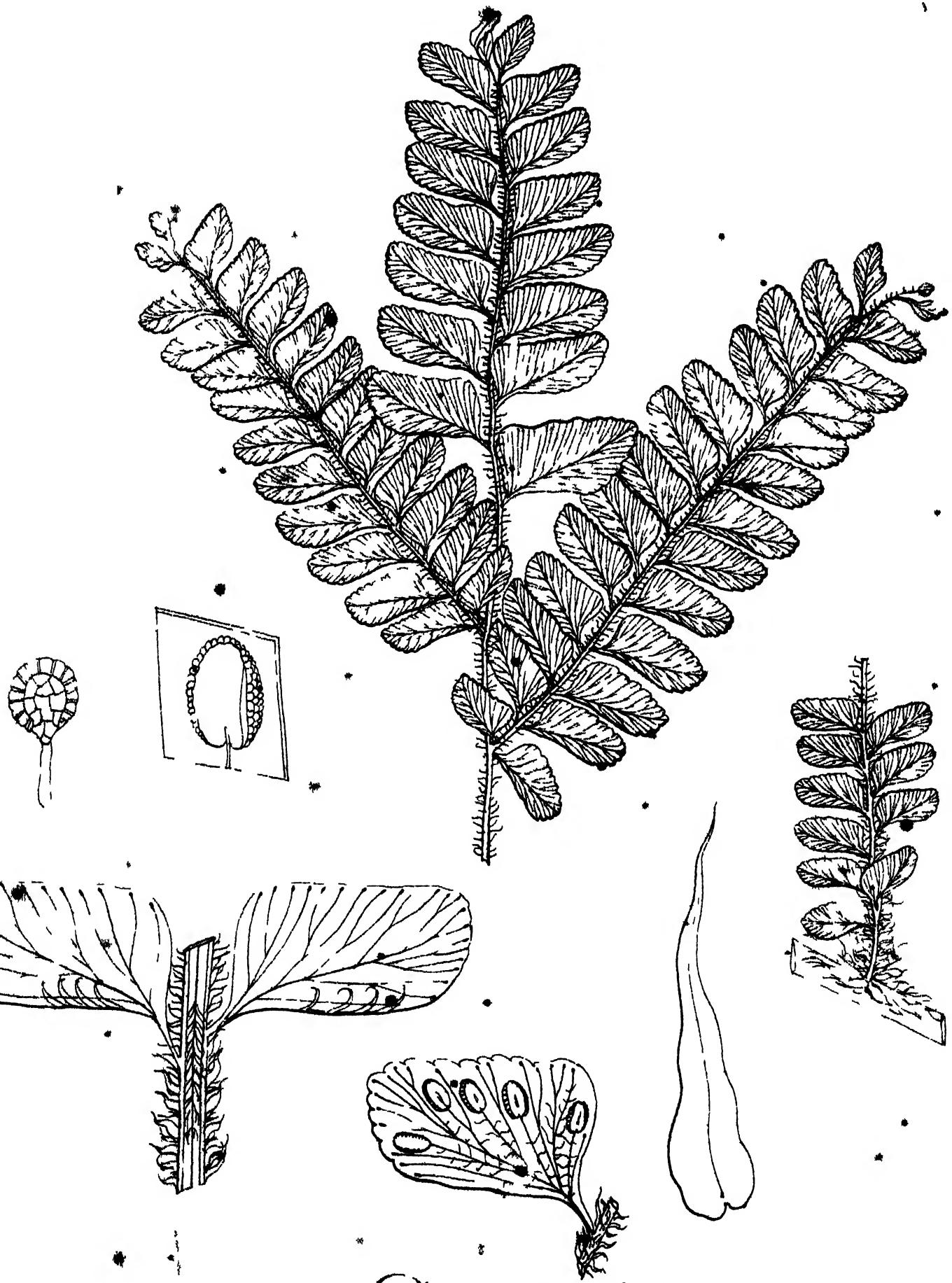
Leaf bipinnate coriaceous pinnae dimidiate or sub dimidiate obtuse articulated sub ecostate Rhizome arborescent Hand nine twice ferns with peculiar fructifications (Moore)

A genus consisting of a single species

DIDYMOCHLINA TUNULATA (Desv) Hook. *Bot. J. L. IV* —*Desv in Mem Soc Linn vi p 262* —*Hook Gard Ferns*
pl 17 —*D. sinuosa* Desv *l c p 28* —*Mart J. L. Crypt Bras p 95 t 28 and 29 f 1* —*Hook Gen Fil t 8*, —*D. squamata* Desv
Journ Bot Apppl 1 p 5 t 2 f 1 —*D. truncatula* J. Sm *Gen of Fern p 81* —*D. dimidiata* Kunze in *Linnæa* *xviii p 122* —
Schlech Suppl p 200 t 84 —*Pippe and Rawls Syn Fil Afr p 10* —*Aspidium truncatum* Sw *Syn Fil pp 52 and 22*
Willd Sp Pl v p 266 —*Aspidium squamatum* Willd *Sp II v 250* —*Monochlaena sinuosa Gaudich in Freyc Voy Bot p 310 t 12*
f 3 —*Diplazium pulcherrimum Raddi Fil Bras p 42 t 3* —*Ionchitis ramosa* & *I. lumen Fil p 43 t 56*

The specimen figured is from Bumth (Tey C S I Tumth)

Hab. Tropical America: Brazil N Grands Andes of Ecuador and Peru W Indian Island Java Luzon Birmah & Africa
 East Med in n Part of Europe to Fiji Island



Didymochlana lunulata
(Deer)

ADIANTFÆ

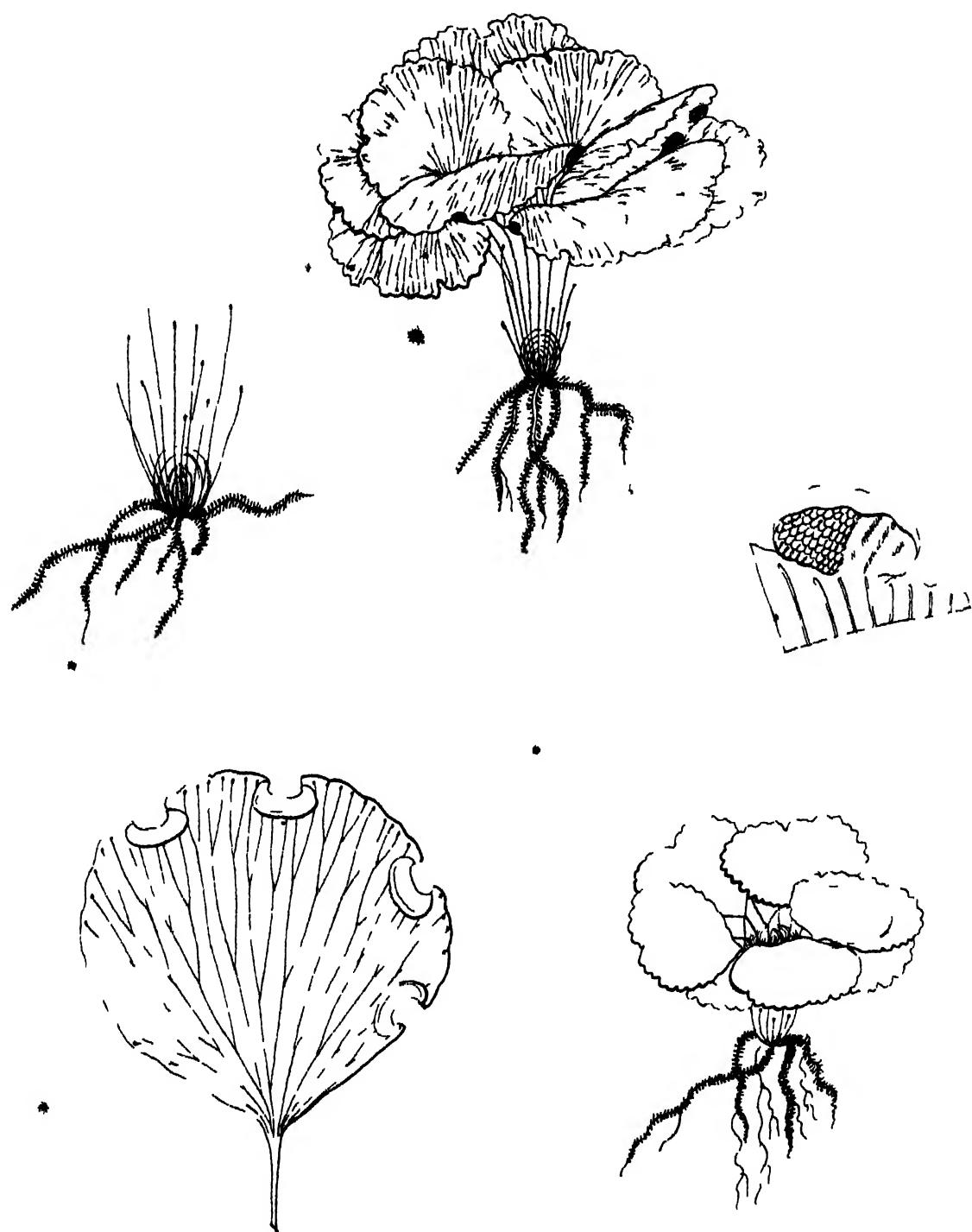
ADIANTUM (See Ferns of Southern India p 1)

ADIANTUM PARISHII (Hook) Small caespitose no distinct caudex roots few fibrous tomentose fronds orbicular
nabellæ membranous pollucid sterile ones crenato dentate, fertile ones pauci (3 or 4) lobate sinuses deep soriferous veins originating
from the base subellato divergent repeatedly dichotomous stipes slender filiform ebeneou black shining articulated at the summit -
Hook Sp Pl n 237 and Fil Exot 1 pl 51

The specimens figured are from Moulmein (The Rev C S P Parish)

Alt Moulmein on limestone rock (called Iwai Kabin) 2000 feet elevation

PLATE No VI



Adiantum Parusha
(Nork)

ADIANTLÆ

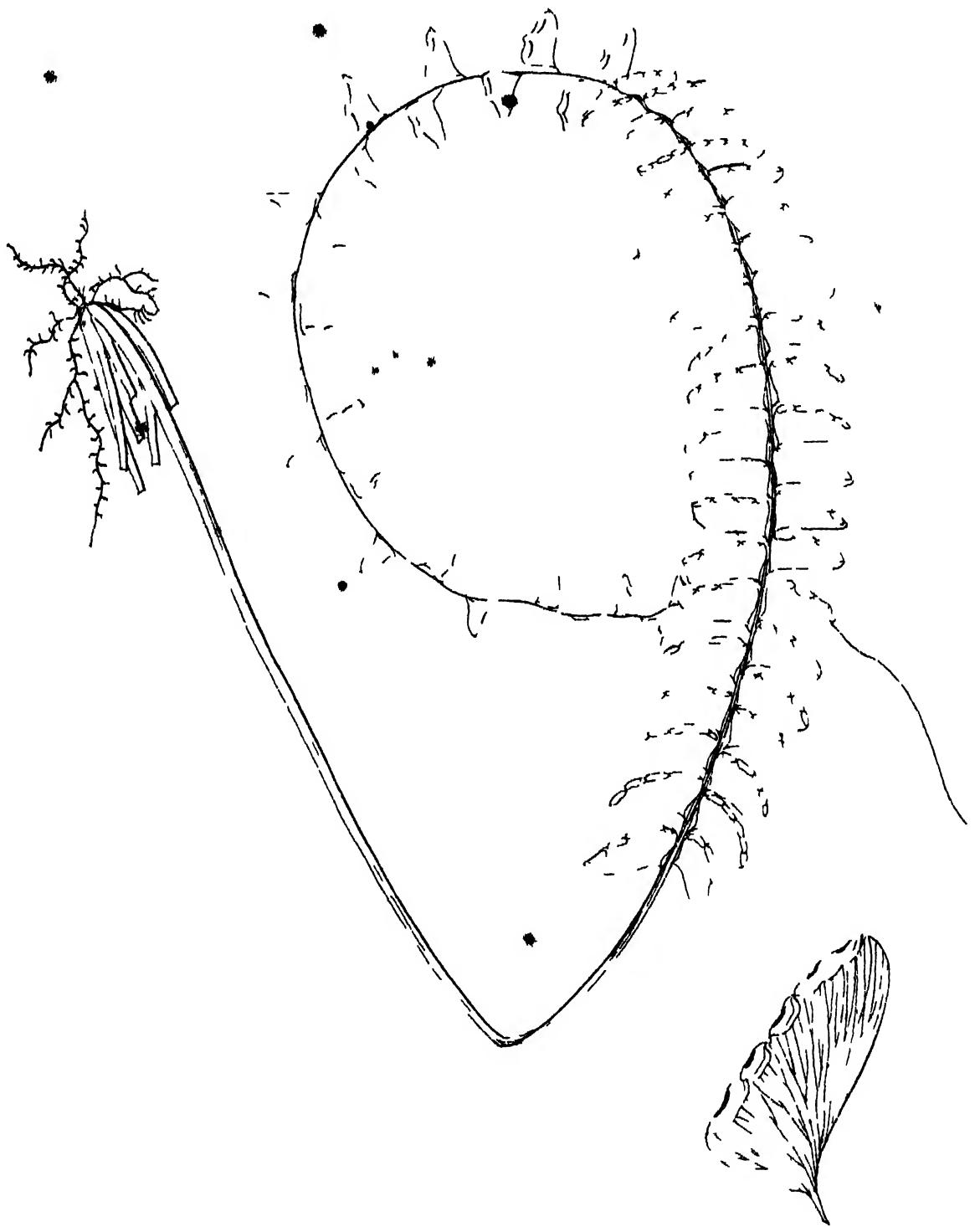
ADIANTRUM EDGEWORTHII (Hool.) Everywhere glabrous fronds linear oblong elongated attenuated and often rooting at the apex and there bare of pinnae. pinnae nearly sessile alternate dimidiato oblong rather acute the upper base truncated and parallel with the rachis superior margin obscurely lobed rather more so in the sterile pinnae indistinct lobes truncated and bearing the sori one on each lobe. sori of long elongated approximate stipes elongated slender and as well as the rachis (beneon) glabrous. *Hool. Sp. Ed. 14*

Nearly allied to *A. caudatum* but pinnae nearly entire

The figure is taken from Sir W. Hooker's Species Liliaceum

Hab. Mooltan, (Punjab)

PLATE No. XVII



Adiantum pedatum
Dent.

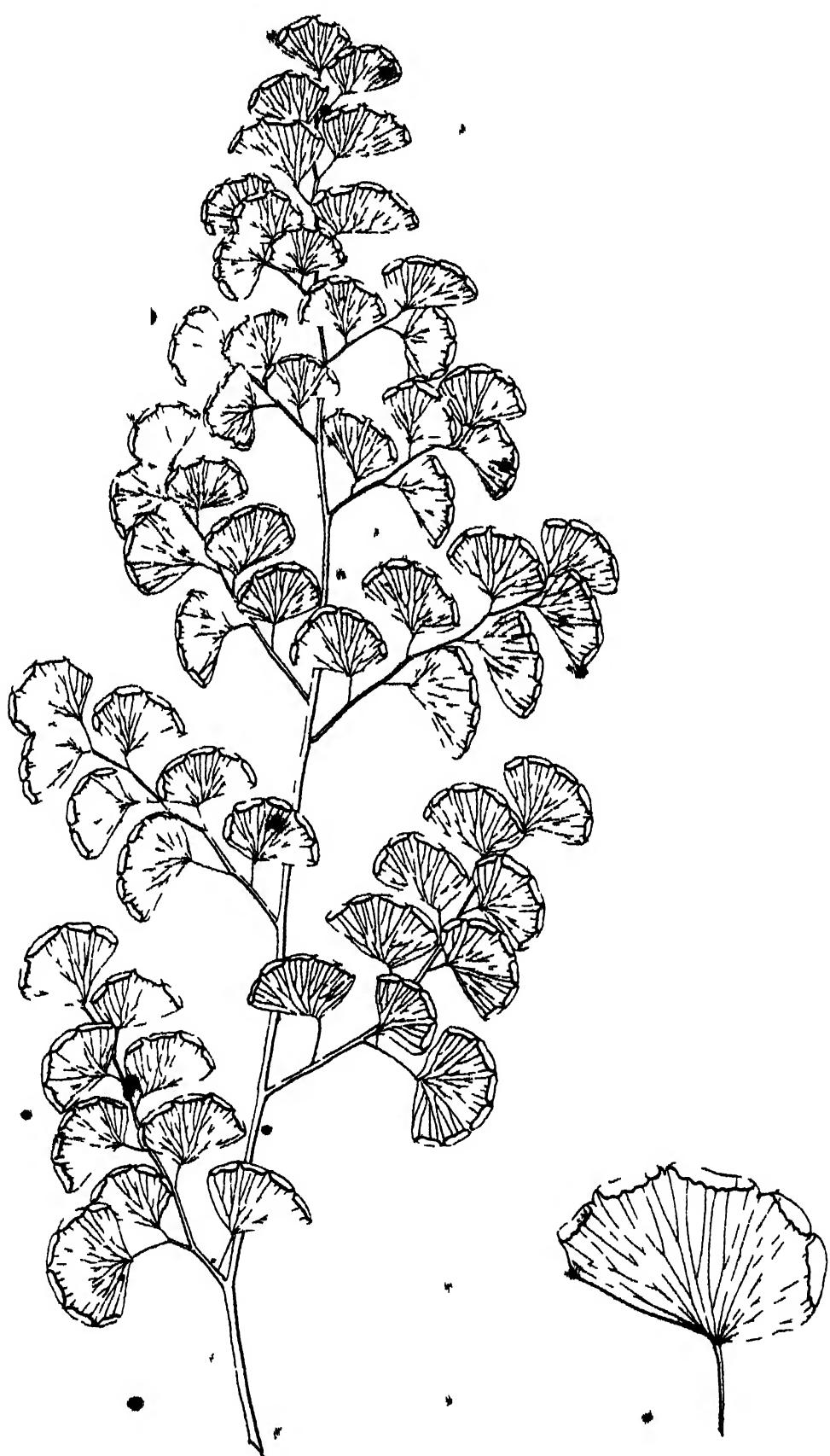
ADIANTEÆ

ADIANTUM EMARGINATUM (Bory) Fronds bi tri pinnate pinnules obcordato cuneate sterile ones serrulated at the apex sori oblong — *Willd* — *Bory in Willd Sp Pl v 419* — *Hook Sp Fil n 39*

The figure is taken from Sir W Hooker's plate of Dr Wight's specimen from the Madras Peninsula. I have not been fortunate enough to find it unless I have confounded it with *A. Ethiopicum*. Sir W Hooker says it has quite the habit of *Ethiopicum* but with sori resembling both as to position and form those of *A. Capillus Veneris*.

Hub Isle of Bourbon Madras Peninsula, Malacca

PLATE No VIII



Adiantum emarginatum
(Willd.)

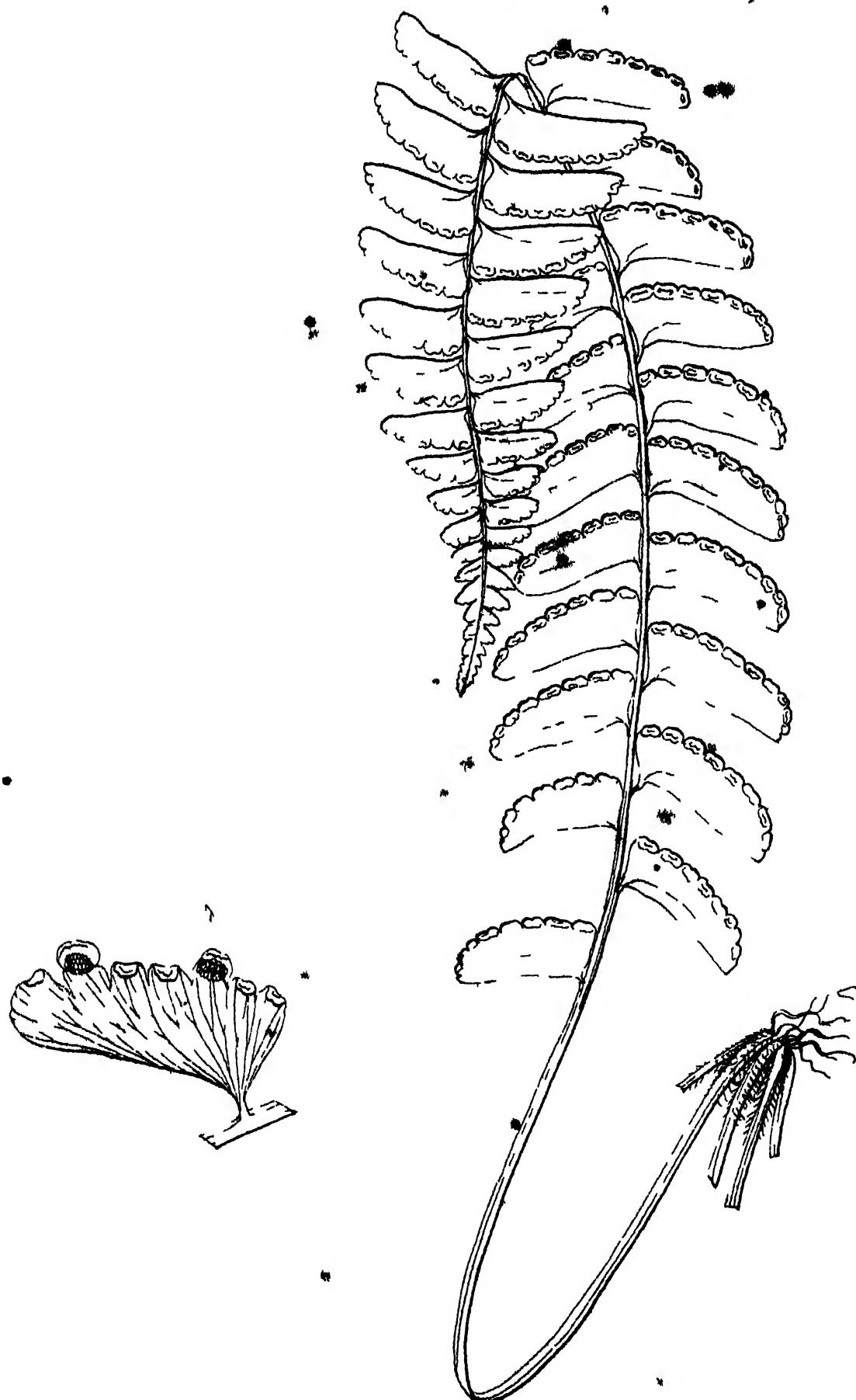
ADIANTEÆ

ADIANTUM SOBOLIFFRUM (Wall) Everywhere glabrous fronds (a foot high often soboliferous Wall) broadly lanceolate pinnatifid pinnae sub membranaceous sessile or lower ones only on very short petioles semi elliptical slightly falcate obtuse the upper base truncated and parallel with the rachis upper margin rather equally lobed sterile ones denticulate lobes soriferous, solid sub reniform stipes oblongous rachis and stipes with a membranous margin on each side!—*Hook Sp Fil* ii 13

The figure is taken from Sir W Hooker's Species Filicum

Hab. Burmah

PLATE No XIX



• *Adiantum soboliferum*
(Wall)

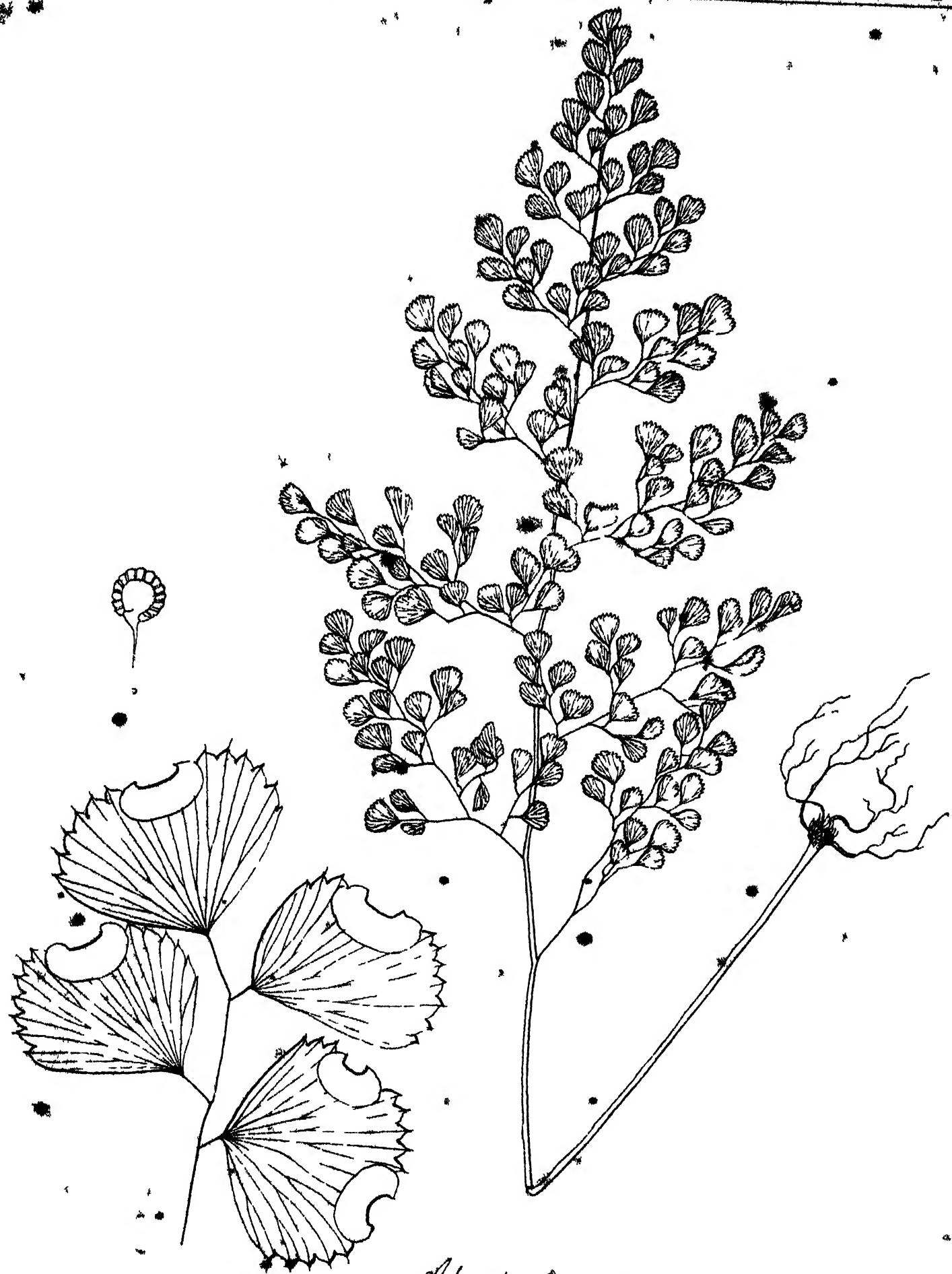
ADIANTEA

ADIANTUM VENUSTUM (Don) Rather small ovate tri pinnate, pinnules thin membranaceous chartaceous glabrous and slightly glaucous beneath shortly petiolulate obovato cuneate rarely sub rhombic acuminate striated the superior margin rounded scarcely even or but slightly 2 or 3 lobed finely dentato serrate fertile lobes with 2 rarely 3 notches each notch bearing a rather large sorus at the bottom involucres reniform cordate sub membranaceous, stipes and slender rachis everywhere ebeneous glossy glabrous — Hook Sp fil n 40 — *A. venustum* Don Prod. Fil Nep 16 — Wall Cat 81

The specimen figured is from Dalhousie (Captain Dyas) *

Hab. Nepaul, Simla Mussoorie Sreenuggur Kamroop Meerut, Khasy (6000 elevation) Afghanistan

PLATF No 14



Adiantum venustum
(Don)

PTERIDEA

ONYCHIUM (See Ferns of Southern India p 10)

ONYCHIUM LUCIDUM (Sp) Caudex creeping & stipites six inches to a foot and more long and as well as the rachises pale brown or stramineous frond a foot and more long ovato acuminate membranaceous coriaceous glossy 3-4 times pinnatisected (primary and secondary divisions pinnated) segments uniform or nearly so in the sterile and fertile ones all narrow linear a little tapering below ultimate ones moderately long all gradually acuminate (not mucronate even in the fertile ones) sori oblong short occupying nearly the whole of the back of the segments involucres white or cream colour membranaceous meeting at the back — Hook Sp Fil n 121 — Spreng Syst Veget iv p 66 — Hook Gen Fil t xi — Cheilanthes lucida Wall Cat n 69 — Cheilanthes contigua, Wall Cat n 69, — Lepidostegia lucida, Don I voli Pl Dep p 14 — Scolopendrium lucidum Hamilton & MS (fide Don)

The specimen figured is from Nynce Tal (Mr Oldham)

Hab Kumaon, Nepaul (700 to 7,500 feet elevation) Mussoorie Gujwal Sivala, Khasya Mishmee Nynce Tal

PLATE No. XXI



Onychium lucidum
(sp.)

PTERIDEA

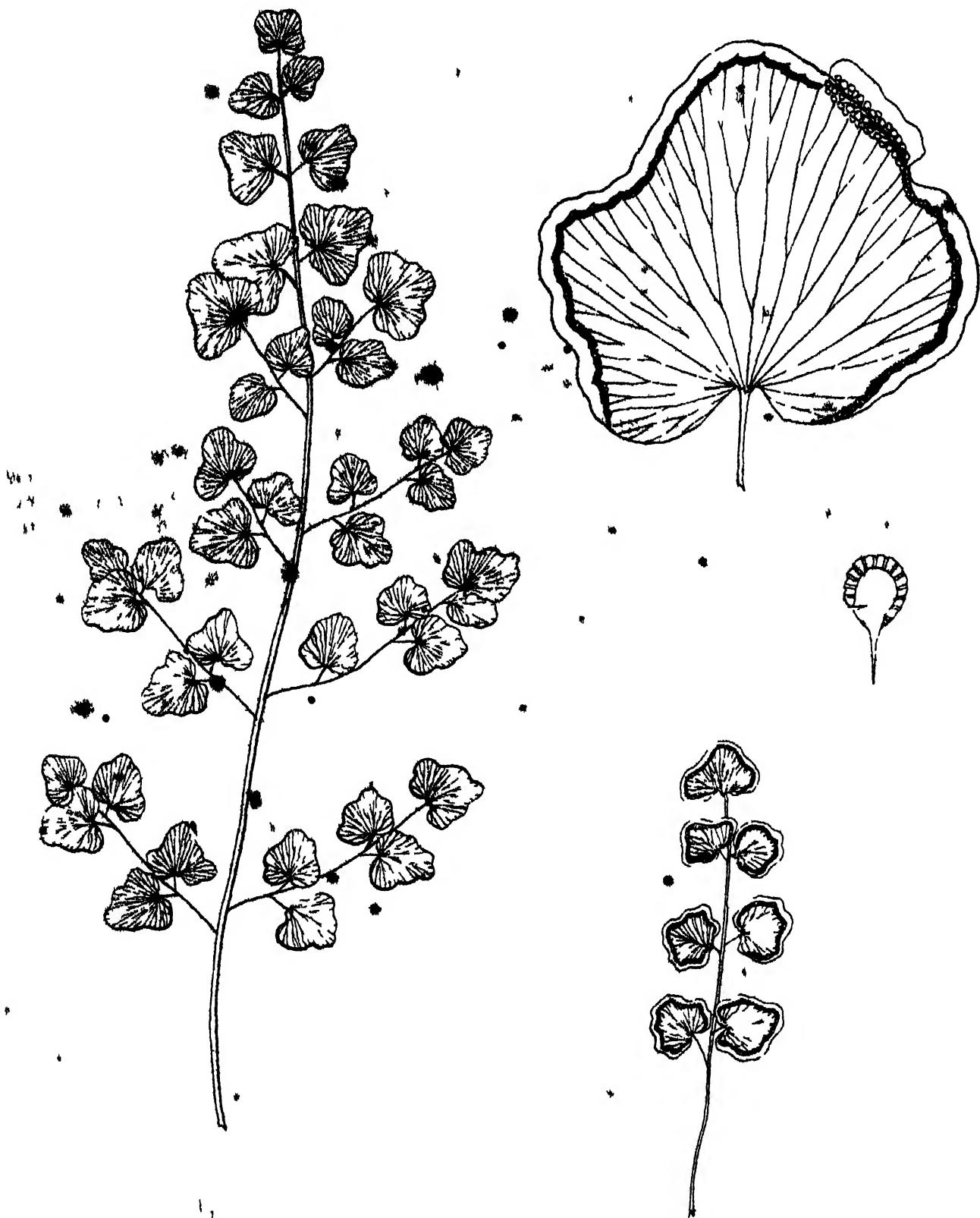
PTERIS (See Ferns of Southern India p 11)

PTERIS CALOMELANOS (Link) Glabrous caudex short thick very scaly fronds subspithameous cœpítose sub coriaceous oblong triangular bipinnate pinnules all petiolulate cordato—(rarely subhastato)—triangular very obtuse entire sometimes sub tri lobate or sinuate at the margin the sinus deep and narrow, veins dichotomously radiated sori continuous involucres membranaceous stipites short scaly at the base and as well as the slender rachises and petioles black ebeneous very glossy Hook Sp Fil p 140—Link Fil Hort Botol p 61—Fee Gen Fil p 129—Allosorus calomelanos Presl Tent Pterid p 153—Hook Bot Mag t 4700—Pteris calomelanos Sw Syn Fil p 106—Willd Sp Plant v p 393—Liebm in Ann p 523—Schlecht Adumbr Fil Cap 43 t 24,—Platyloma, J Sm Pteris hastata Thunb (not of others)

The specimen figured is from Simla

Hab S Africa, elevation 400 to 1000 feet—Graham's Town Macalisberg Isle of Bourbon—Simla Kuanam

PLATE No VII



Pinus calomelanos
(Link)

PTERIDÆ

PFERIS DACTYLINA (Hedw.) 1 inches to 1 foot high slender creeping sending out wiry fibres fronds sub coriaceous
embranaceous rather rigid 26 inches long digitate pinnae 35 subradiate linear sessile slightly tapering below much and narrowly
undulated the stipe portions sparsely and deeply spinuloso serrate especially towards the apex involucres rather broad subintramarginal
membranaceous close pressed veins simple stipites numerous tufted very slender and as well as the midribs of the pinnae (very
prominent beneath) staminateous Hook Sp Fil n 160

Hab Sikkim—Himalaya, (Dr Thomson)

PLATE No XXIII



Yucca daudylina
hook

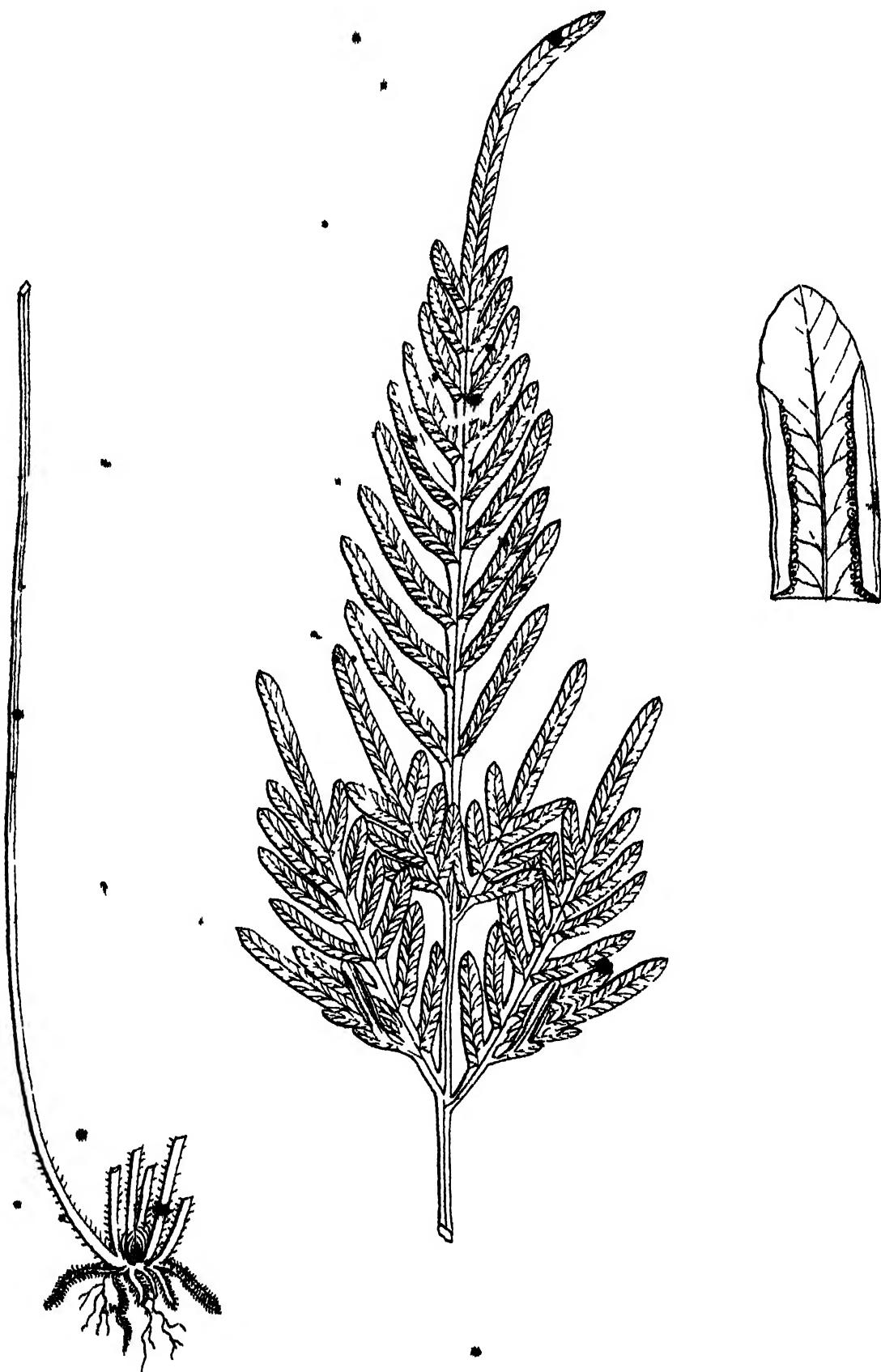
PLATE I

PTERIS GRIFFITHII (Hook) A foot and more high and slender graceful caudex none roots of tufted fibres frond ovato lanceolate sub membranaceous pinnate upper pinna simple 2 or 3 of the lower pairs again pinnated simple pinnae and pinnules exactly linear $\frac{1}{2}$ an inch to an inch and a half long obtuse mostly opposite every where entire sessile with the base adnate and decurrent so as to form a narrow wing to the rachis lowest pinnules of the inferior pinnae sometimes again divided terminal pinnule always elongated veins distant once forked veinlets divaricating sori continuous involucres sub intramarginal membranaceous not reaching to the apex stipites slender longer than the fronds stramineous brown and a little scaly at the base — *Hook Sp Fil* n 170

The figure is taken from Sir W Hooker's *Species Filicum*

Hab. Mishme Assam

PLATE No. LXIV



Pteris Griffithii
(Hook)

III MIDL I

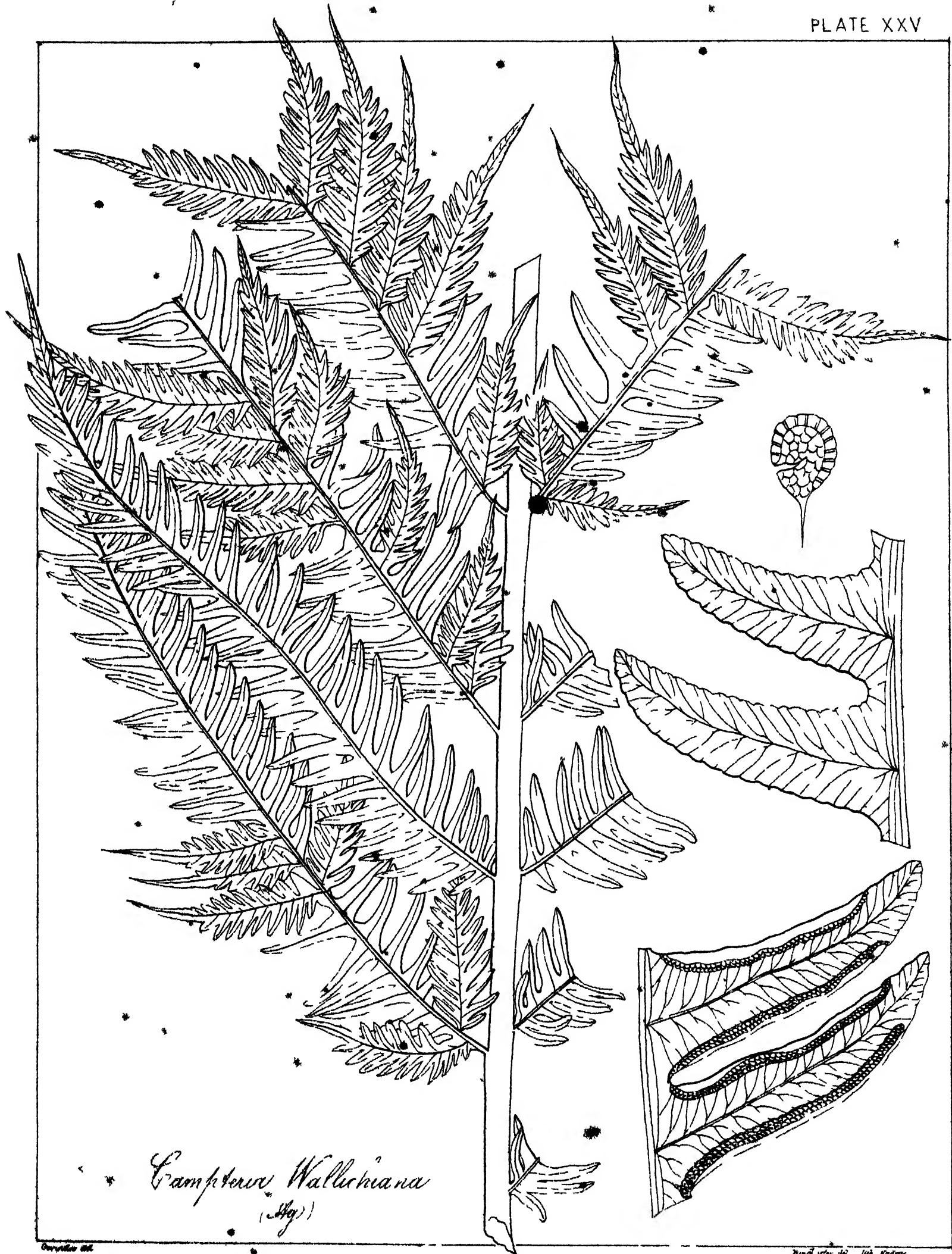
CAMPIFRIA (See Ferns of Southern India p 14)

CAMPIFRIA WALICHIANA (Ag.) Frond ample glabrous sub membranaceous 3 partite lateral branches compoundly divided terminal one elongated pinnated pinnæ numerous sessile 4-6 inches long linear lanceolate acuminate deeply pinnatifid segments linear lanceolate obtuse sterile ones serrulate all approximate about 1/2 an inch long basal veins monarcuate the rest free and forked rarely a solitary areole at the base of the costule stipes very long 5-6 feet stout rich cistaneous and as well as the paler coloured rachises very smooth and glossy—Hool. S. Fil. II 206—Iteris Wallichiana Ag. Sp. Gen. Pterid. p. 69—It. umbrosa Wall. Cat. n. 109 (not of B.)—It. pellucens Ag. Sp. Gen. Iterid. p. 43?—Pt. connexa J. Sm. Fil. Philip. in Hook. Bot. Journ. III p. 405 (name only)—Pt. pectinata Don. Prod. Fl. Nepaul p. 15—(Agardh refers to this *Pt. americanus*, Wall, which is however a slight var. of *Pt. quadrangularis*)

The specimen figured is from Sikkim (Dr. Thomson)

Hab. Kumaon, Gurhwal Sikkim, Khasya Luzon

III No. XXV



Campptosorus Wallachiana
(L.) Gray

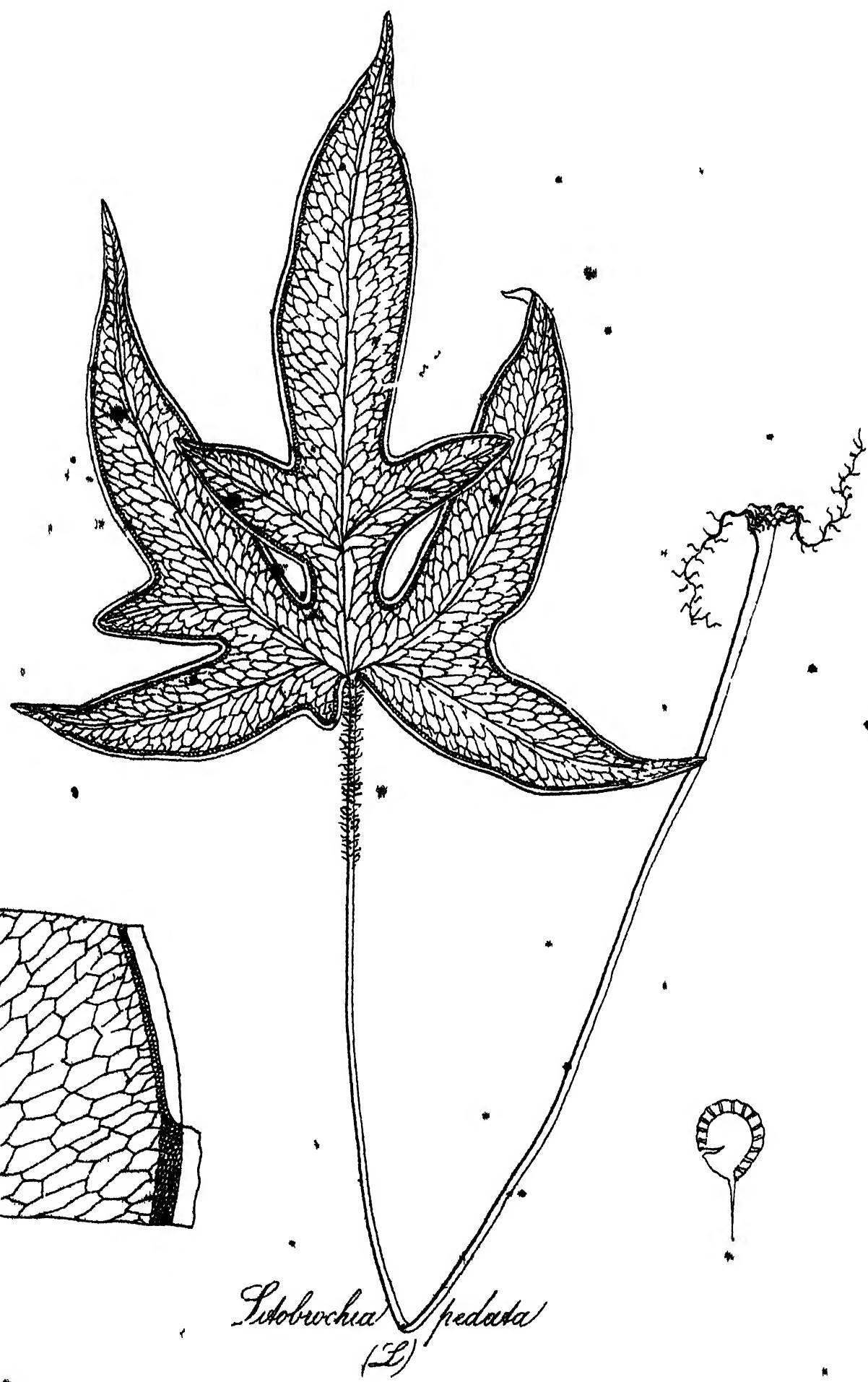
TRIDIA

LITOBOCHIA (See Ferns of Southern India p 73)

LITOBOCHIA PLDATA (L.) Candex short thick erect or declined copiously rooting fronds fasciculate when mature coriaceous opaque cordate tripartite pedate lateral primary divisions bipartite on the inferior side or on both sides pinnatifid terminal one pinnatifid generally cuneate and narrowed at the base the segments with entire lobes or again pinnatifid ultimate ones oblong with more or less acute sinuses the margin of the sterile plant crenulated sori continuous involucres narrow entire veins everywhere anastomosing so as to form a network of oblong hexagonal areoles stipes terete ebony black hispid at the base — *Hook Sp Fil* n. 209 — *Itarsi pedata* *Linn Sp Pl* p 1032 — *Sw Syn Fil* p 105 — *Langsd et Fisch Ic Ed* p 12 et 20 — *Willd Sp Pl* p 358 — *Schkh Fil* p 91 t 100 — *haddi Fil* t 65 f 3 t 66 and 66b — *Br Iodii Nov Holl* p 111 — *Hook Bot Mag* t 3 247, and *Fil Exot* t 34 — *Pt palmata* *Willd Sp Il v p 307* — *Pt collina* *Willd Fil Bras* p 41 & 65 f 1 2 — *lt varians*, *Raddi l c t 64* — *Pt Mysurensis* *Wall Cat n 87, 1* — *Pt polytomum* *Ker in Linnaeana* p 1 289 and 322 — *Litobrochia pedata* *Pr Tent Pterid p 119* — *Moore Ind Fil* 1 p xlii — *Ussbeera pedata* 1 *Sm Gen of Lins* p 17 and *Ferns in Hort Kew* p 14 — *Doryopteris pedata* *J Sm Cat Kew Ferns* p 4 and *Cat of Cult Pterid p 30* — *Ic Gen Fil* p 133 — *Homionitis profunde laciniata* *de Flum Am* p 21 t 34 *Fil* p 130 t 12

The specimen figured is from Meulman (1 or Paris)

Hab West Indies Jamaica St Domingo Cuba Martinique Brazil Island of Trinidad Peru Chacapoyas Columbia New Granada Venezuela Galapagos Tropical New Holland — Sulney Hills (Dr Wight) Nilgiris (Rev E Johnson) in *Herb Hook* — Burmah



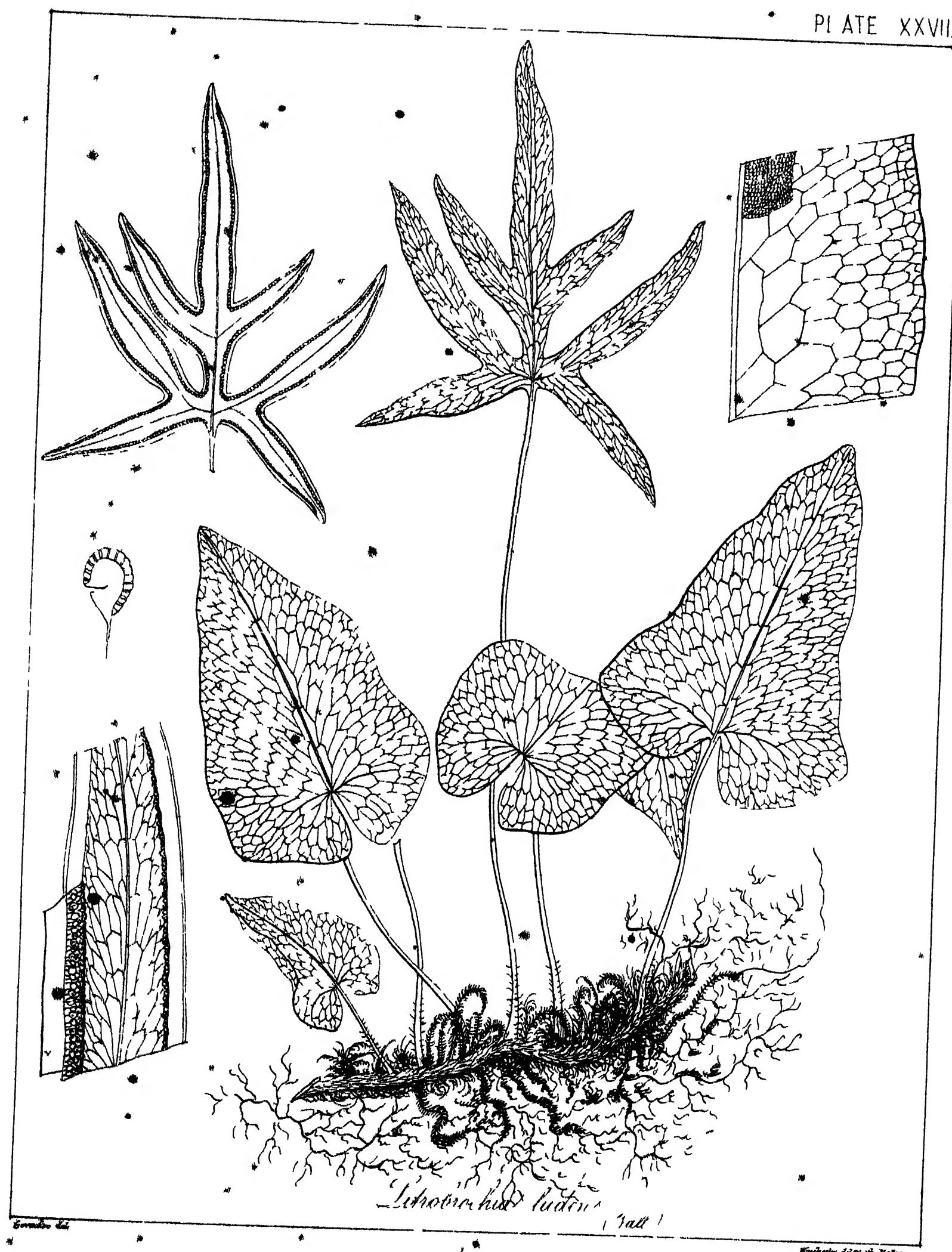
* LITERATURE

LITOPPOCHIA LUDENS (Wall.) C. Chr. a long creeping branch 1 thicker than a cow-hair scaly throwing out a profusion of woolly fibrous roots fronds remote on the caudex long stipitate numerous of true pinnules beneath them thin substrate and undivided or hastately lobed or deeply 3 lobed or 3 pinnate with petiole the terminal lobe 2 or 3 or pinnatifidly lobed the lateral lobs pinnatifid more or less deeply on the inferior side (dorsum) segment 1 unirachiate linear lanceolate or long linear veins as elsewhere finely reticulated the areoles of long and mostly parallel or nearly so with the costae and margin soon on the most deeply div'd and narrowest fronds continuous stipes very long and as well as the main rachis beneath black ebonyous — *Hock Sy. Tid. 1871* p. 10 — *Pteris ludens* Wall Cat n. 88 — *Doryopteris Willdchii* J. Sm. In *Thid. Tid. 1871* p. 101

The specimen figured is from Moulnam (Sri Lankish.)

Hab. Burmah, Tuzon

11 VIII N. XXVII



LINDS FER

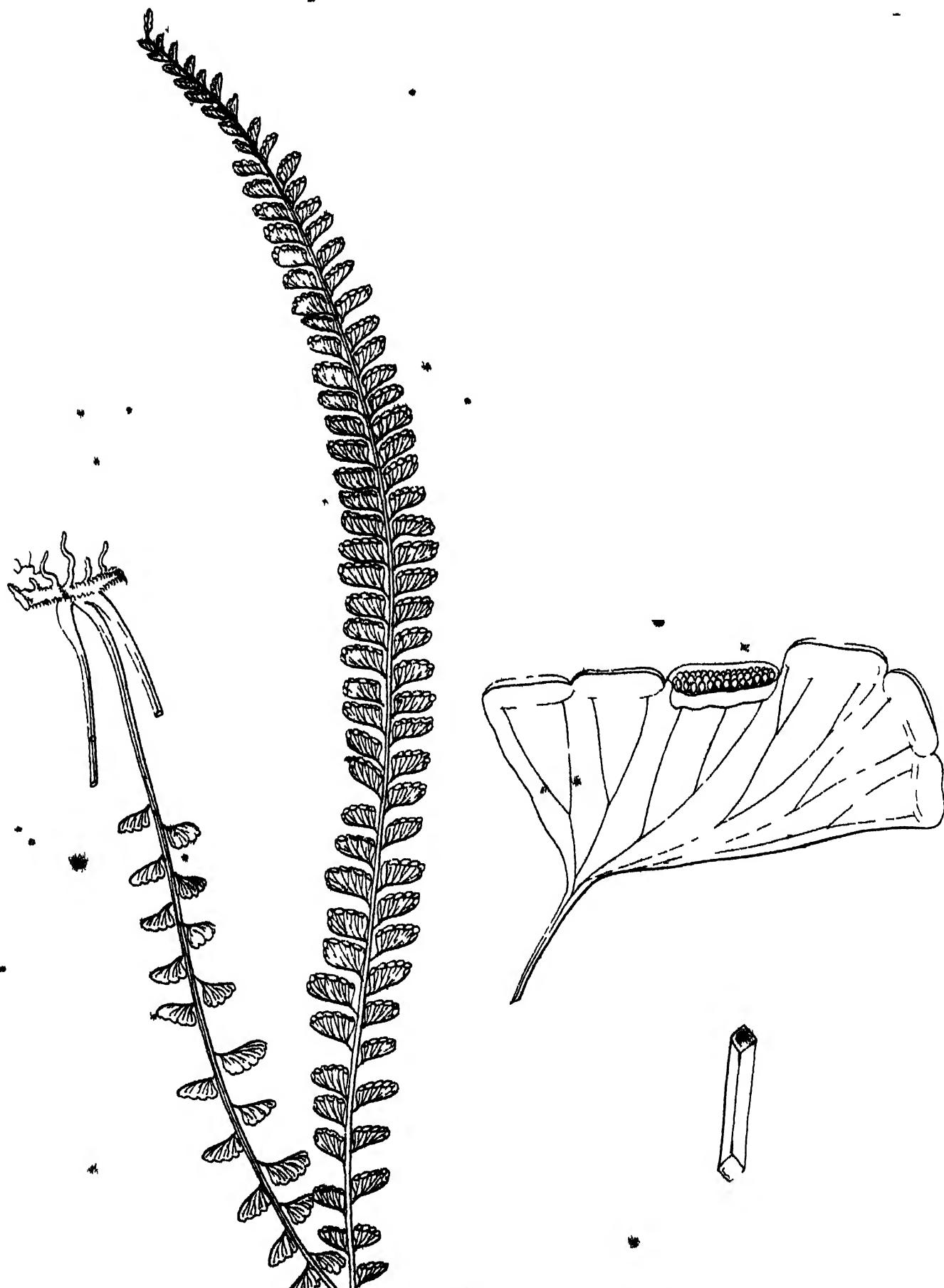
LINDSÆA (See Ferns of Southern India p 7)

LINDSÆA LOBBIANA (Nock) Caudex somewhat creeping fronds tufted pinnate linear lanceolate much acuminate lower pinnae remote the rest approximate all of them slightly petiolate patent sub membranaceous subnitent obliquely flabellato or half ovate the superior base truncate upper margin curved (convex) lobate soriferous, sori interrupted linear, stipes rather short and rachis brown — Hook Sp 1 l 1 20.

The specimen figured is from Moulinen (Rev. Iarish)

Hab. Burmah, Jiva

PLATE No LXVIII



Lindsaea Lobbianae
(Hook.)

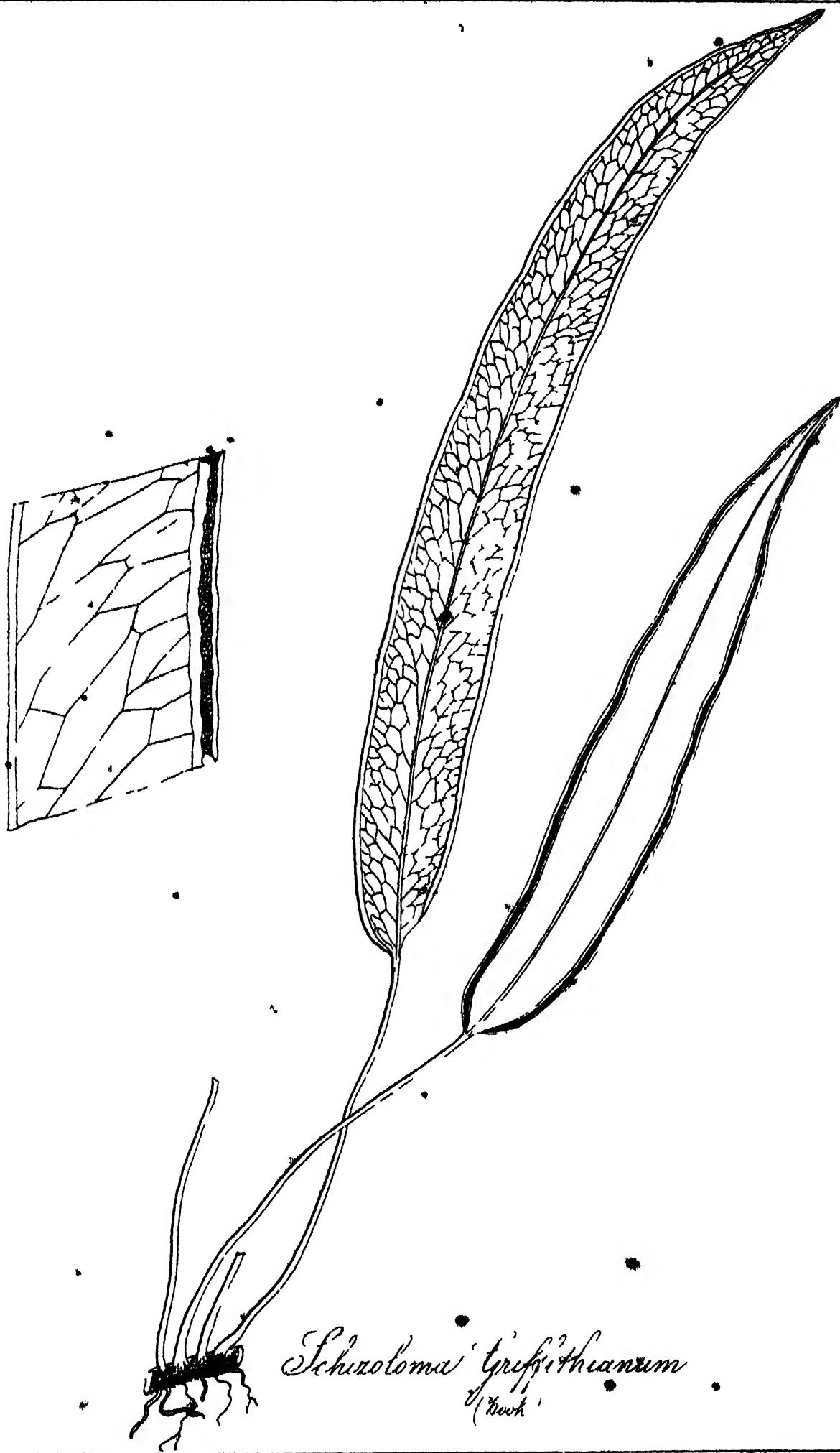
LINDSÆLÆ

SCHIZOLOMA (See Ferns of Southern India, p. 9)

SCHIZOLOMA GRIFFITHIANUM (Hook.) Lax and flaccid caudex creeping short stipites shorter than the elongate lanceolate simple membranaceous costate frond, veins reticulated sorus continuo is round the entire margin — Hook. Sp. Pl. 1 219

Hab. Mergui Burmah

PLATE No. XXIV



Schizoloma griffithianum
(Brook)

TRIBE GLEICHENINAE

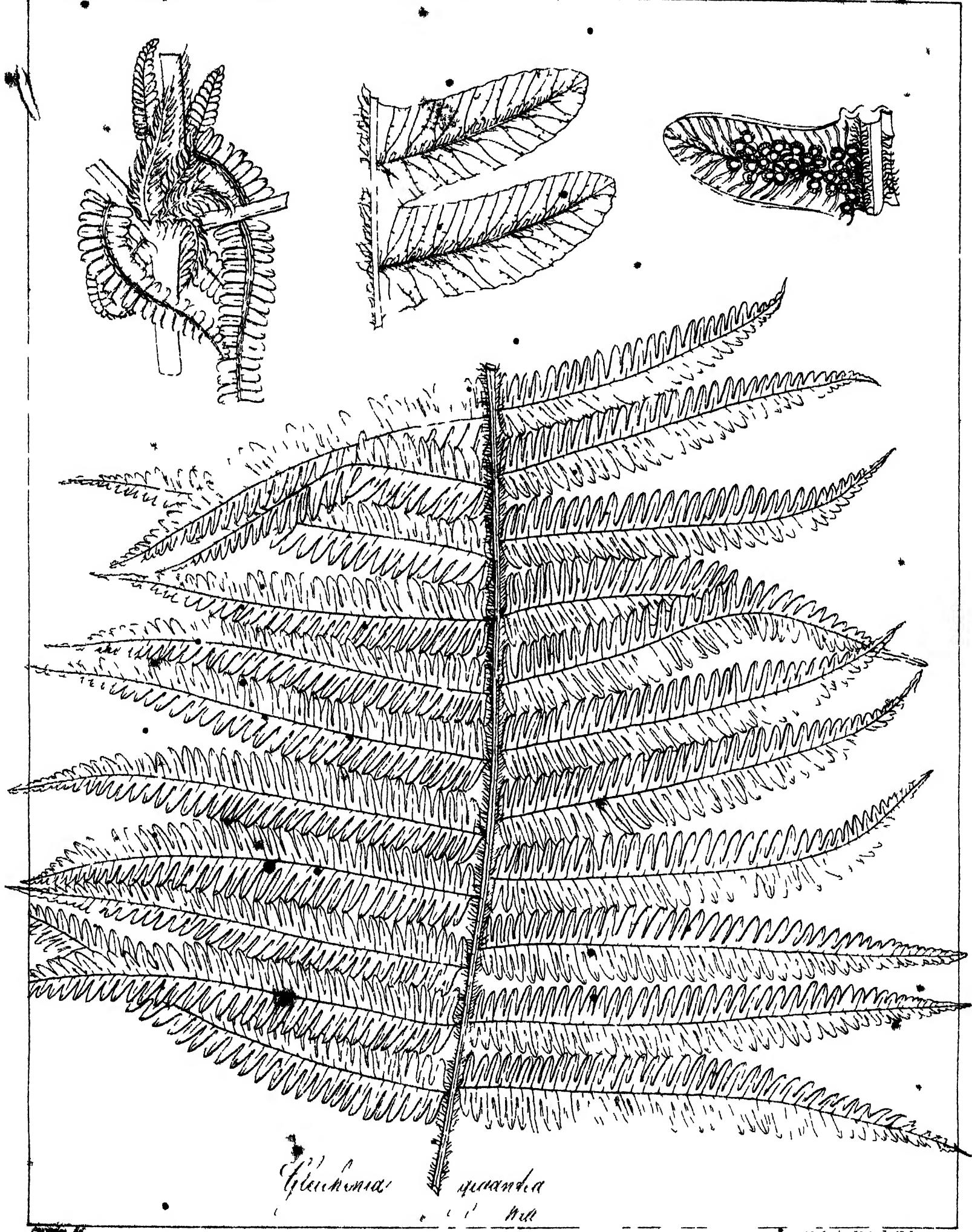
GLEICHENIA (See Ferns of Southern India, p 20)

GLEICHENIA GIGANTEA (Wall) primary pinnae opposite oblong acuminate its rachis above with a slightly elevated very obtuse margin secondary lanceolate acuminate alternate deeply pinnatifid segments oval oblong very obtuse entire with an elevated crest at the base base forming an interrupted marginal line to the rachis which beneath as well as the costa is woolly, scarcely glaucous capsules 3 — Hook Sp Pl 1, Wall Cat n 107 — *Hicriopteris speciosa*, Presl — *Mesosorus giganteus*, Hassk Mertensia gigantea, Wall IIb

The specimen figured is from Sikkim (Thomson)

Hab Assam Nepal Bhutan, Sikkim, Khasia, China, Fukien, Java

ILLATE No LXX



ASPIDIEÆ

POLYSTICHUM (See Ferns of Southern India p 41)

POLYSTICHUM STIMULANS (Kunze) Caudex short stout oblique very scaly stipites densely tufted 2 4 inches long & thin chaffy flexuous slender and tawny as is the rachis fronds sub coriaceous 4 6 8 inches long linear or oblong lanceolate acute pinnate pinnæ lax distant distinctly petiolate from an oblique truncate cuneate base rhomboideo triangular with generally a spinose auricle at each base and with two or three large sharp serratures which as well as the apex are terminated with a spine rarely one of the auricles becomes a free pinnule sori few in two rows one on each side of the costules — Hook Sp Fil IV 12 — K. & Herb Jde Metten Aspid p 43 — Polystichum P. Tent Pterid p 83 — Aspid pungens Wall Cat n 369 (not Kl's) — Aspid ilicifolium, Don I. odi Asp p 13 (not Fer) — Aspid sagittatum Jacquem. MSS in Herb Mus Paris and Herb Hook

The specimen figured is from Sikkim (Dr Thomson) and partly from Sir Will Hooker's plate in 'Species Filicum'

Hab. Nepal, Kumaon (elevation 9000 feet) Simla Valley of the Jumna Sikkim, Chingtam, Tambar river

ILLATI No. XXXI.



Polystichum aculeatum
(Hedw.)

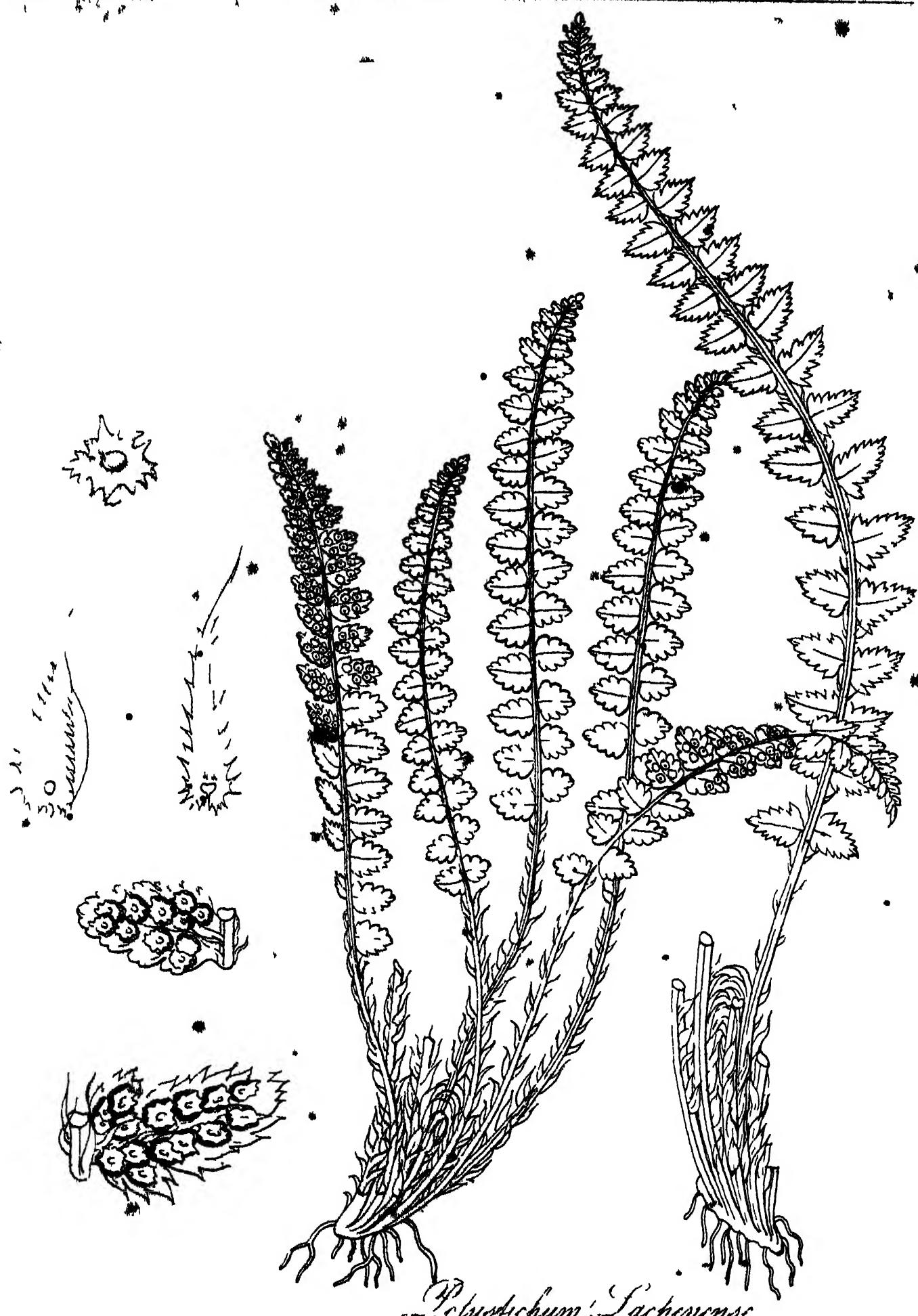
ASPIDIF E

POLYSTICHUM LACHENLNSL (Hook.) Caudex short oblique stout scaly above stipite very densely tufted numerous and compact stout mucronate 2 4 inches long sub flexuous glossy black or dark brown scaly fronds 4 8 inches long linear lanceolate coriaceous pinnate pinnule the largest less than 1 in. long patent rather distant sessile deltoid ovate sub pinnatifido crenate rather obtuse sub pinnuloso serrate or unpaired soon in two rows on each pinnule rachis striatimarginous setiferous paleaceous with whitish appressed scales—*Hook Sp Pl* iv 4

The figure is taken from Sir W. Hooker's Species Filicium

IIb Sikkim, Himalayi Lachen

ILLATI No. VIII



ASPIDIEÆ

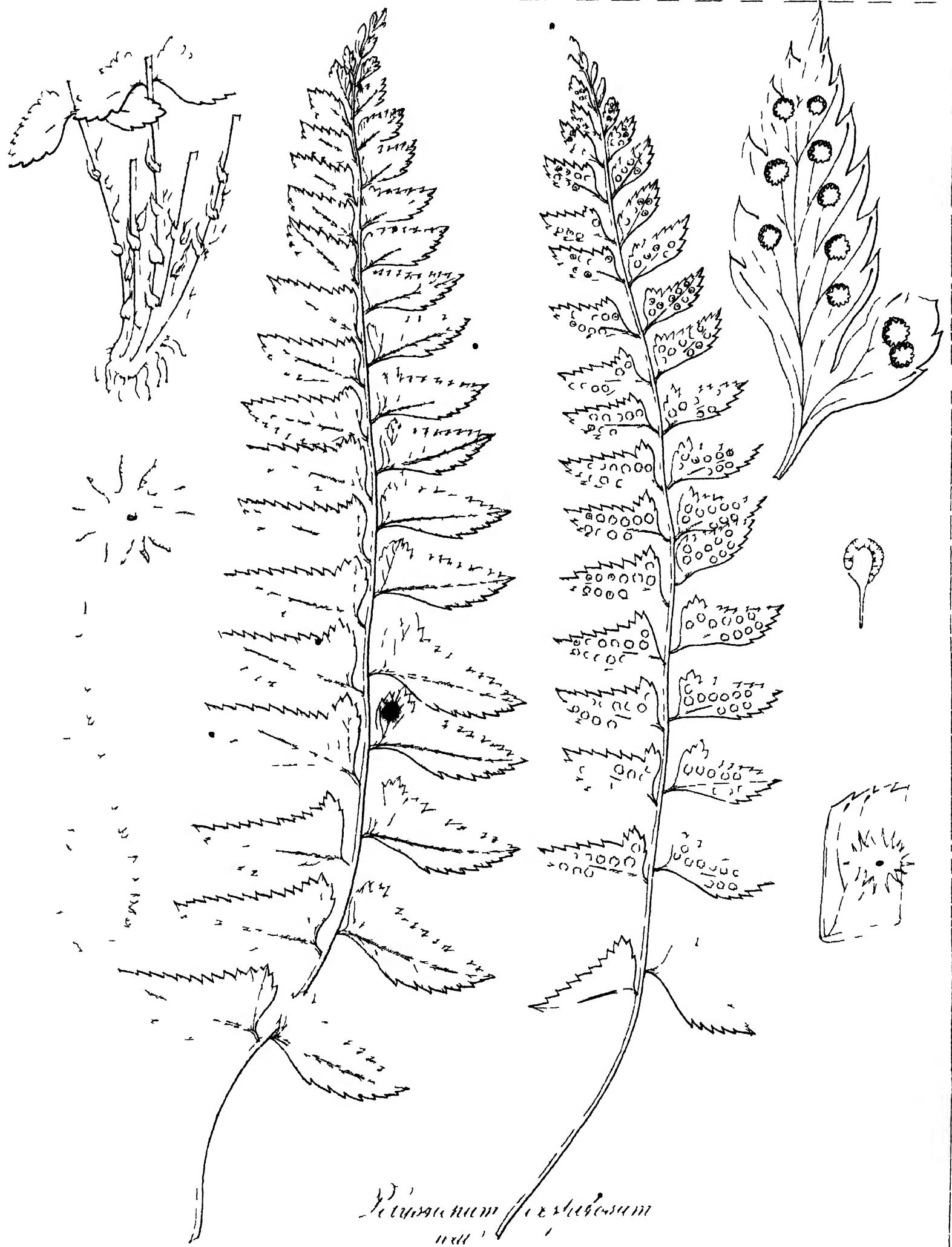
POLYSTICHUM (EPITOSUM (Wall) Caudex a short thick scaly rhizome scales often ciliated stipites tufted slender 2-6 inches long stramineous as well as the rachis fronds 4 inches to a span and more long oblong—or linear lanceolate acute rather than acuminate chartaceous membranaceous often glossy pinnatifid pinnæ rather distant horizontal 3-1½ inch long petiolate from an entire obliquely cuneate truncate and obtusely auricled superior base trapezoidæ ovate obtuse or acute sharply but scarcely mucronato serrate inferior base incised soot uniseriate on the pinna and the auricles between the costa and the margin, involucres peltate ciliate at length deciduous —Hook Sp Fil iv 13 —Wall Cat n 367 —Metten Aspid. p 36; —*Polystichum Schott* Pr —*Aspidium obliquum* Don Nigaul p 43 (hd. Moore)

The specimen figured is from Nynce Tal, (Oldham)

Hab Northern India especially in the Himalayas (elevation 4—10 000 feet,) Nepal, Simla, Kumaon, Nynce Tal, Lachen Sikkim, Bhutan

PLATE No XXXIII

111 VIII



Cyrtopterum flexuosum

ASPIDIEÆ

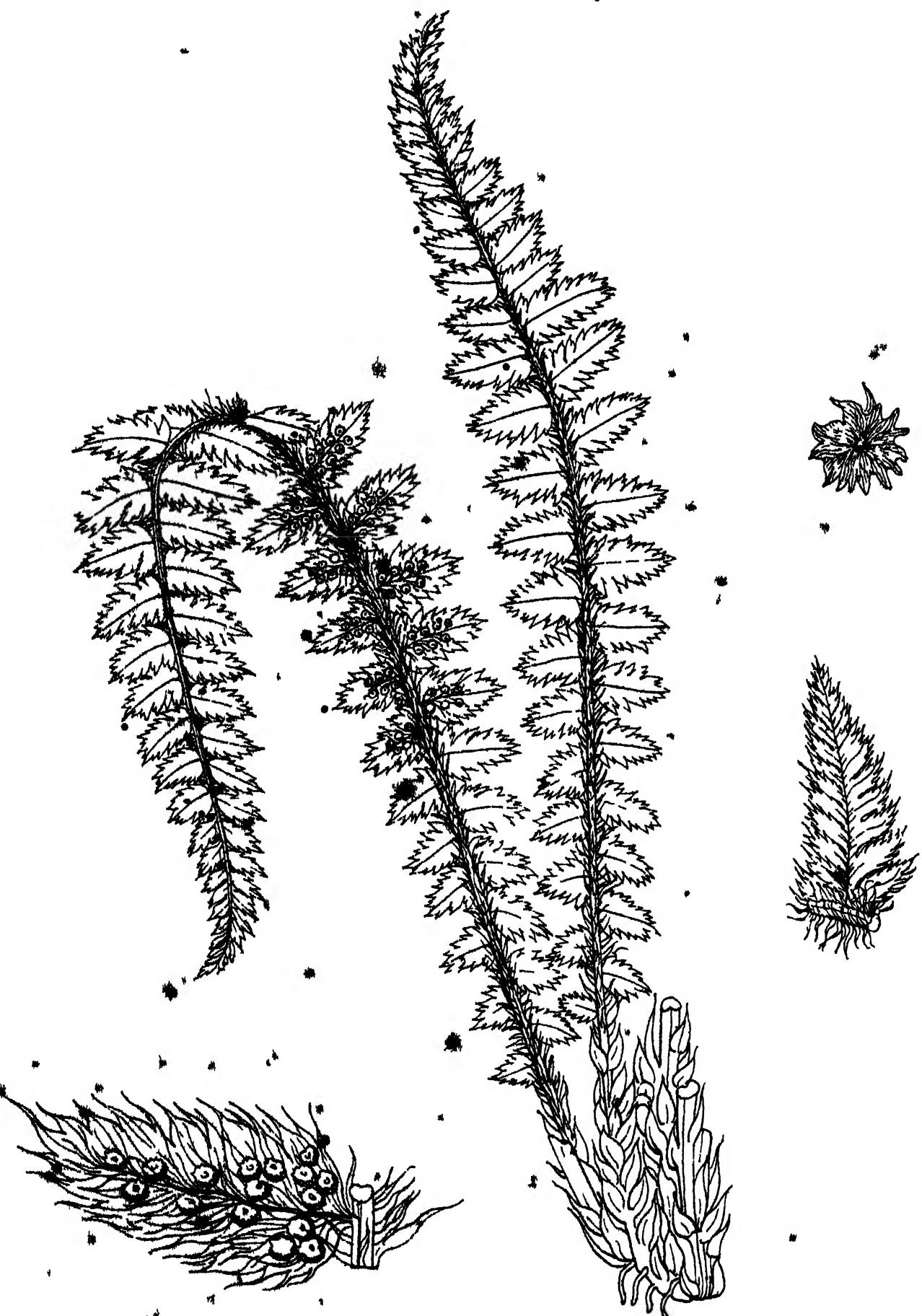
POLYSTICHUM PRESCOTTIANUM (Hook.) Caudex short thick erect or declined paleaceous with very large brown scales stipites densely tufted stout 1 1/4 inches long, and as well as the stramineous glossy rachis and costæ and veins especially beneath villous with soft lax hair like pale coloured scales on the stipe; mixed with large ovate membranaceous ones fronds 1 2 feet long rarely in the broadest part 2 inches wide elongate lanceolate acuminate soft and membranaceous gradually narrowing at the base pinnate or sub bi pinnate pinnæ ovato oblong serrate tapering to an obtuse apex deeply pinnatifid (except at the very apex) almost to the costa (some of the inferior ones pinnate) lobes or pinnules ovate or oblong without auricle strongly and uniformly serrated the serratures with long soft hair like points sori chiefly on the superior half of the frond in two rows near the costule involucres peltate entire membranaceous —*Hook. & J. 22 — Aspid. prescottianum Wall. Cat. n. 363 — Verrill Aspid. 1. 48 — Polypodium Pseudo Longitius Jacquemont Mis in Herb. Hook. 3 — frond bi pinnate*

The specimen figured is from the Himalayas (Dr. Thomson) and from Sir W. Hooker's plate in *Species Filicium*

Hib. Kumaon, Himalayas from extreme west to Bhotan in the east (elevation 10—12,000 feet)

PLATE NO. XXXIV





Polystichum Preissianum
(Mack)

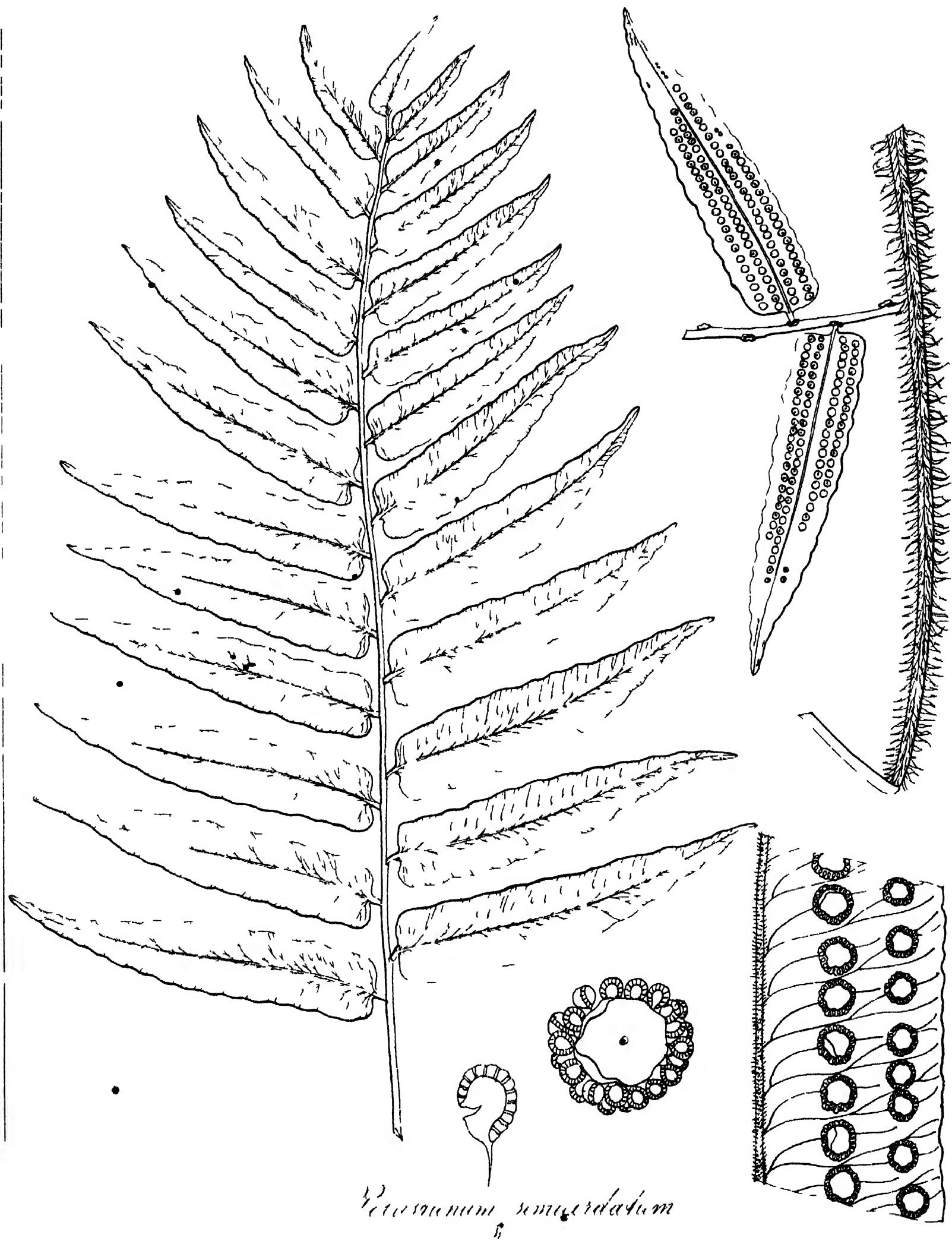
ASPIDIEAE

POLYSTICHUM SEMICORDATUM (Sw) Caudex thick horizontal creeping ? very densely clothed with long ($\frac{1}{2}$ of an inch) subulate scales stipites solitary (not tufted) stout a span and more long shaggy with long slender paleaceous scales at length deciduous, fronds 2 3 feet long broad or ovato lanceolate (8 10 inches wide) coriaceous membranaceous blackish green (when dry) pinnatifid articulated upon the rachis numerous approximate horizontal from a broad sessile shortly petiolated semi cordate base oblong acuminate straight or falcate entire or obtusely crenate (near spinulose) sori mostly on the back of the veinlets in four series two on each side the inner one close by the costa the other between it and the margin veins fascicled involucres slightly convex depressed in the middle suberose---var δ truncatum pinnae at the base on each side transversely truncated

The specimen figured is from Moulmein (Rev C S P Parish)

Hab Twa Kabin Moulmein—This species occurs in slightly altered varieties in America, the W Indian islands, Luzon, Cochin, China, and Borneo

ILLATE No XXXV



ASPIDIEÆ

LÄSTREA (See Ferns of Southern India p 33)

LÄSTREA FENICULACEA (Hook.) Caudex stout creeping densely clothed with twiny satiny ovate acuminate pileaceous scales stipites 4 span to a foot long, stout below and there pileaceous like the caudex fronds perigamentaceous glossy translucent when fresh 1 2 feet and more long oblong ovate acuminate supradecompondually pinnate primary pinnae (inferior ones) from 4 inches to almost a foot long long petioled ovate finely acuminate secondary ones 1 3 inches long also petioled these are broken up into a succession of smaller and less pinnae or pinnules and all finely cut into linear acute obscurely costate segments simple or once or twice forked or having a lateral lobe tooth which generally bears the solitary rather small sorus sorus sub globose as broad as the segment or tooth * involucres small dark brown convex reniform of sub coriaceous texture rachises with a few scattered flexuous setae — *Hook. Sp. Pl. iv 36 — Z. aristata* γ *dissecta* *Moore*

The specimen figured is from Sikkim (Dr Thomson)

Hab Chola, Sikkim, (elevation 8—10 000 feet)

PLATF No VVVI



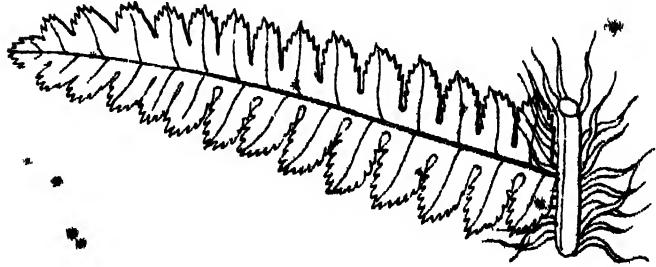
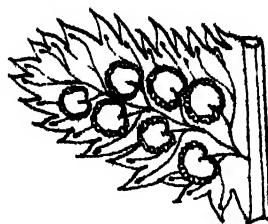
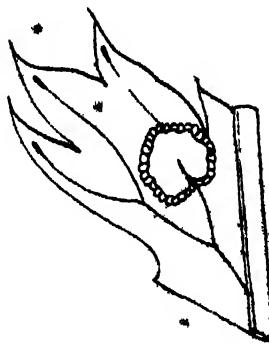
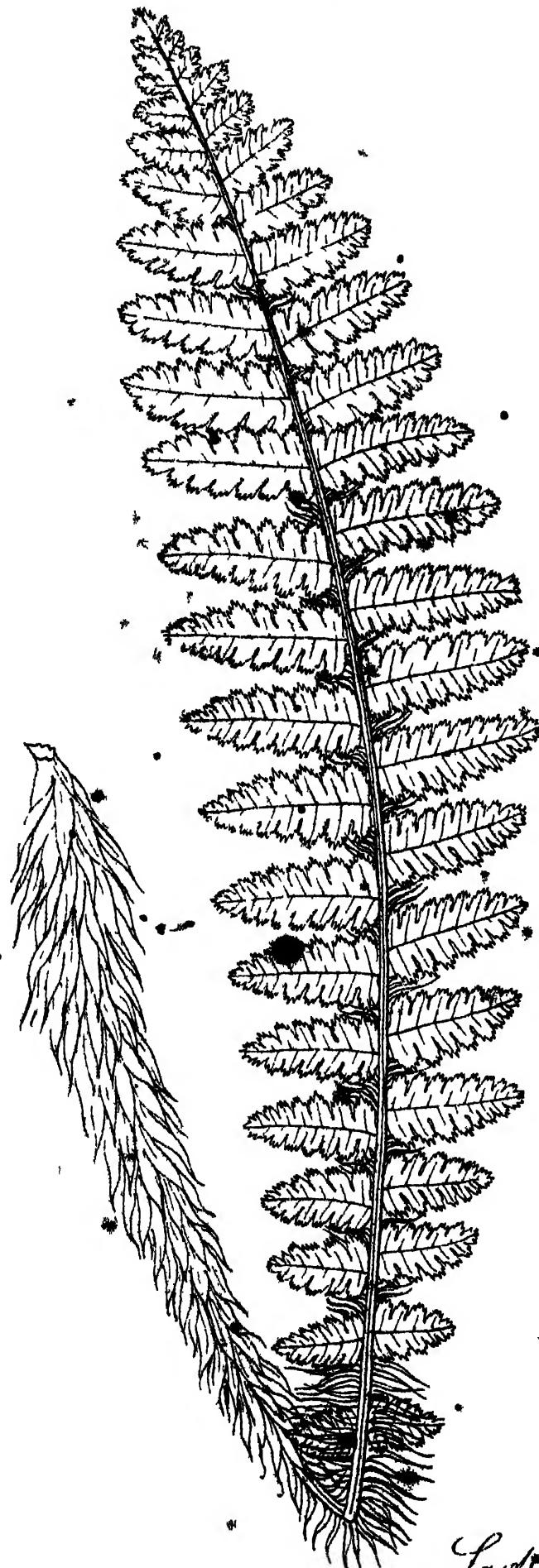
ASPIDIEA

LASTREA BRUNONIANA (Hook.) Caudex short thick erect clothed as are all the nascent fronds with a dense mass of large subulato lanceolate brown scales $\frac{1}{2}$ of an inch long, stipites tufted 4 inches to a span long swollen at the base and as well as the (usually) black rachis squamose with long dark brown glossy lanceolato subulate patent flexuose scales mixed with others quite setiform fronds subcoriaceous membranaceous a span to 12 14 inches long, 2 inches broad, moderately attenuated at the base, very obtuse at the apex oblong lanceolate pinnate pinnæ approximate sessile horizontally patent oblong very obtuse deeply sometimes quite to the rachis pinnatifid segments $\frac{1}{2}$ inch long horizontal broad oblong or oval obtuse lobato pinnatifid the margins strongly and very sharply serrated the teeth spreading sub setaceous at the points principal veins (or costules) flexuose veinlets forked distant son 3 4 on each side the costule between it and the margin, involucres reniform — *Hook Sp Fil* iv 113 — *Aspidium*, *Wall Cat* n 341 — *Metten Aspid* p 54

The figure is taken from Sir W Hooker's Species Filicium)

Hab Kumaon, (elevation 12,000 feet,) Sikkim—Himalaya, 13 000—15,000 feet—Punjab

PLATE No LXXXVII



Lacistema Branoniana
(Hook.)

ASPIDIEÆ

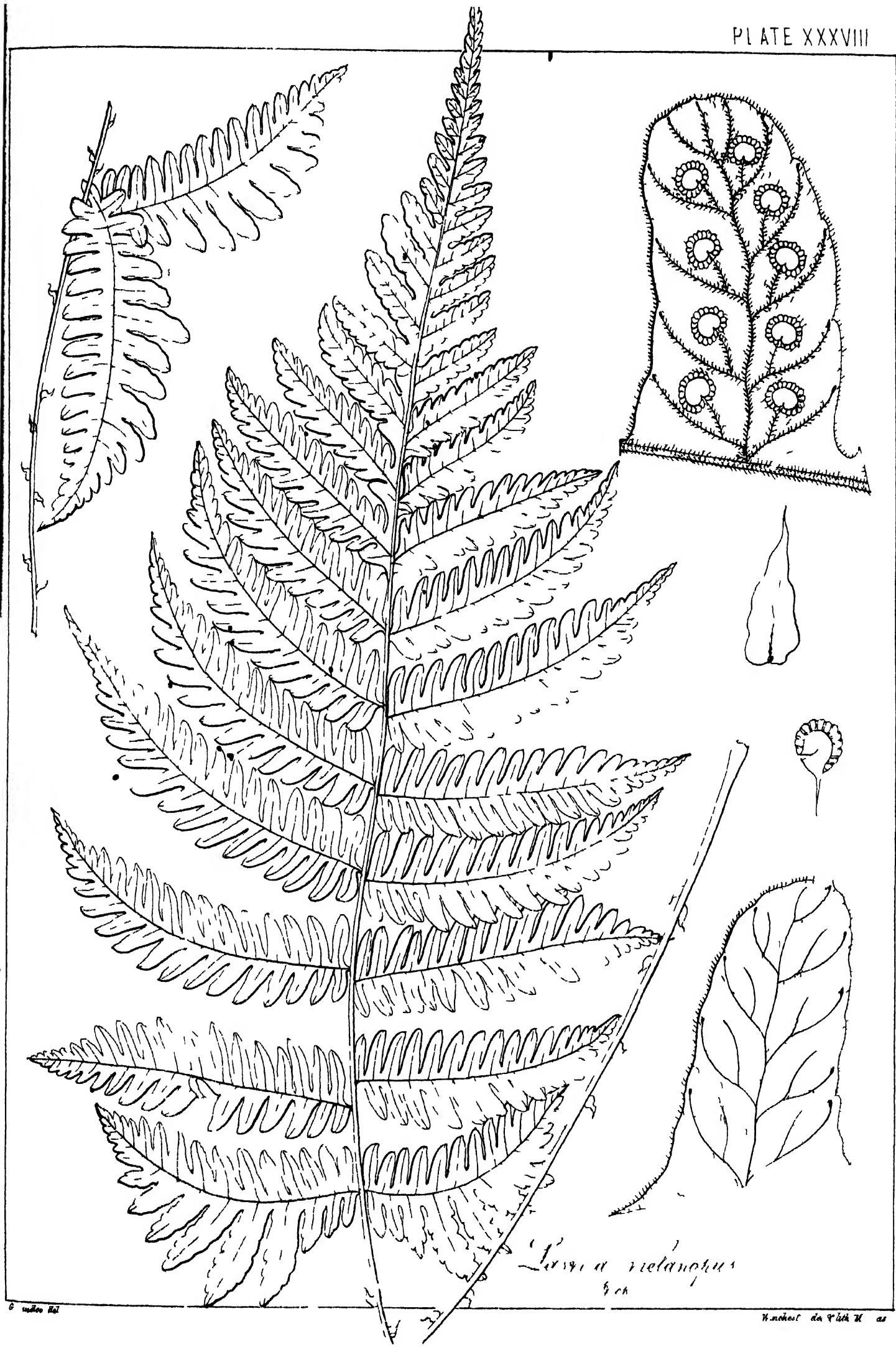
LASTREA MELANOPUS (Hook) Caudex ? stipes a little scaly below a span or more long rather slender and as well as the rachis glossy ebeneous black, fronds 12 14 inches long, membranaceous bright green obsoletely subglandular pubescent especially on the costæ pinnate, pinnæ sub-opposite sessile 4 6 inches long 1 $\frac{1}{2}$ inch wide oblong shortly acuminate pinnatifid segments oblong obtuse rarely subfalcate entire or nearly so lowest pair of pinnæ semiovate subfalcate the inferior half of the pinnæ with much longer segments 1 $\frac{1}{2}$ inch long lobato pinnatifid veinlets forked distant sori small on the superior branch of the veins equi distant, between the margin and the costule involucre small membranaceous reniform ciliated —*Hook Sp Fil* iv 110

The specimen figured is from Moulmein, (Rev Parish)

Hab Moulmein, Amboyna ?

PLATE No XXXVIII

PLATE XXXVIII



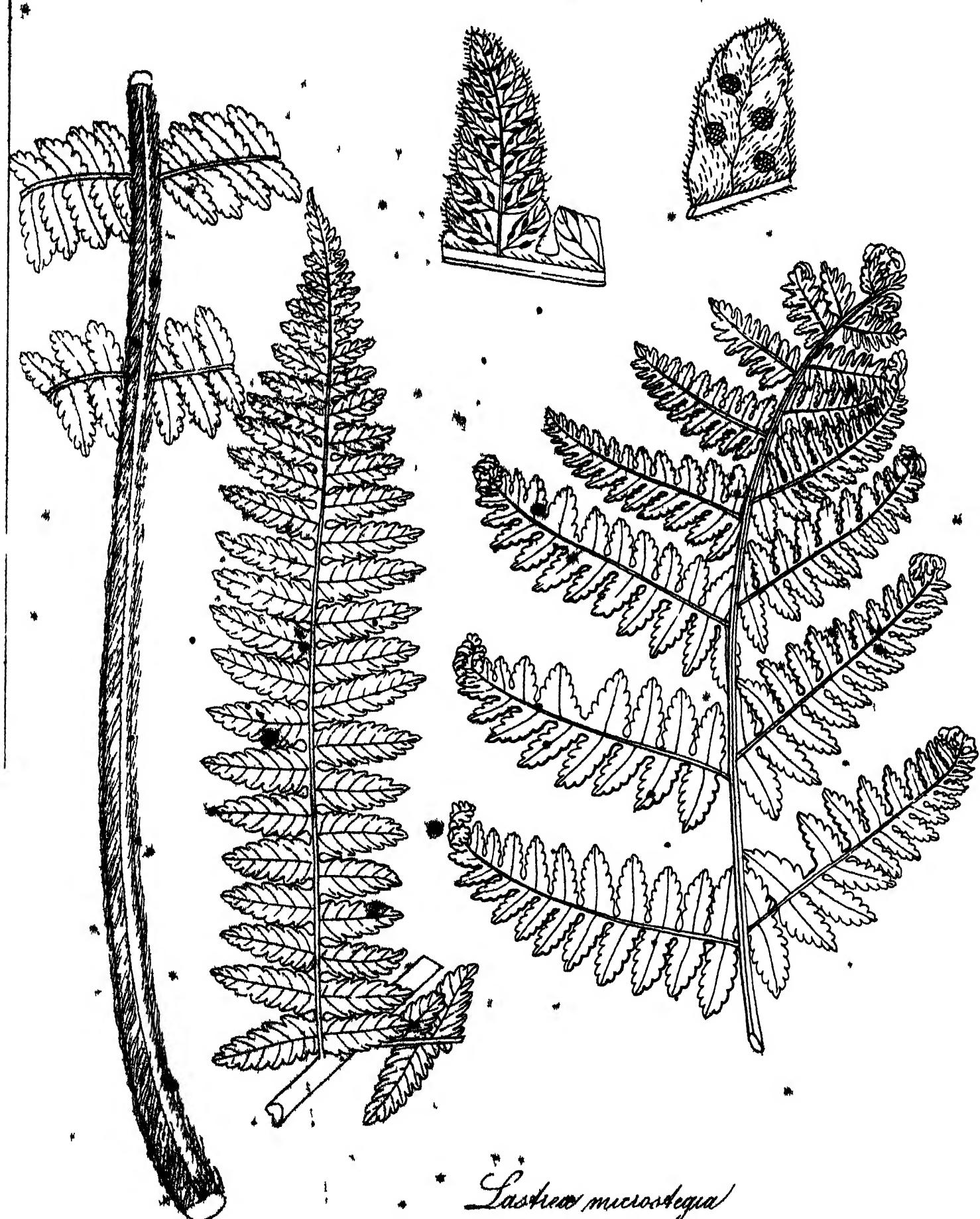
ASPIDIEÆ.

LASTREA MICROSTEGIA (Hook.) Caudex ? stipes a span long stout tawny brown laxly scaly, rachis and costæ stout stramineous frond 2 2½ feet long broad lanceolate membranaceous glabrous acuminate bi pinnate pinnæ sessile 4 5 of the lowest pairs shorter 4 inches long sterile and with broader and more approximate pinnæ intermediate ones 6 8 inches long, from a broad base oblong gradually acuminate pinnules ¼ to nearly an inch long from a broad scale and quite adnate base pyramidal and obtusely acuminate pinnatifid about half way down to the costæ all connected at the very base by a narrow costal wing lobes or segments small ovate blunt entire veinlets distant, sori minute 4 6 on each lobe in two series half way between the costule at the margin involucrum very small reniform pale greenish brown —*Hook. Sp. Pl. iv 119*

The figure is taken from Sir W. Hooker's 'Species Filicum'

Hab. Khasya, (temperate region)

PLATE No. XXXIV



Loxogramme microstegia
(Hook)

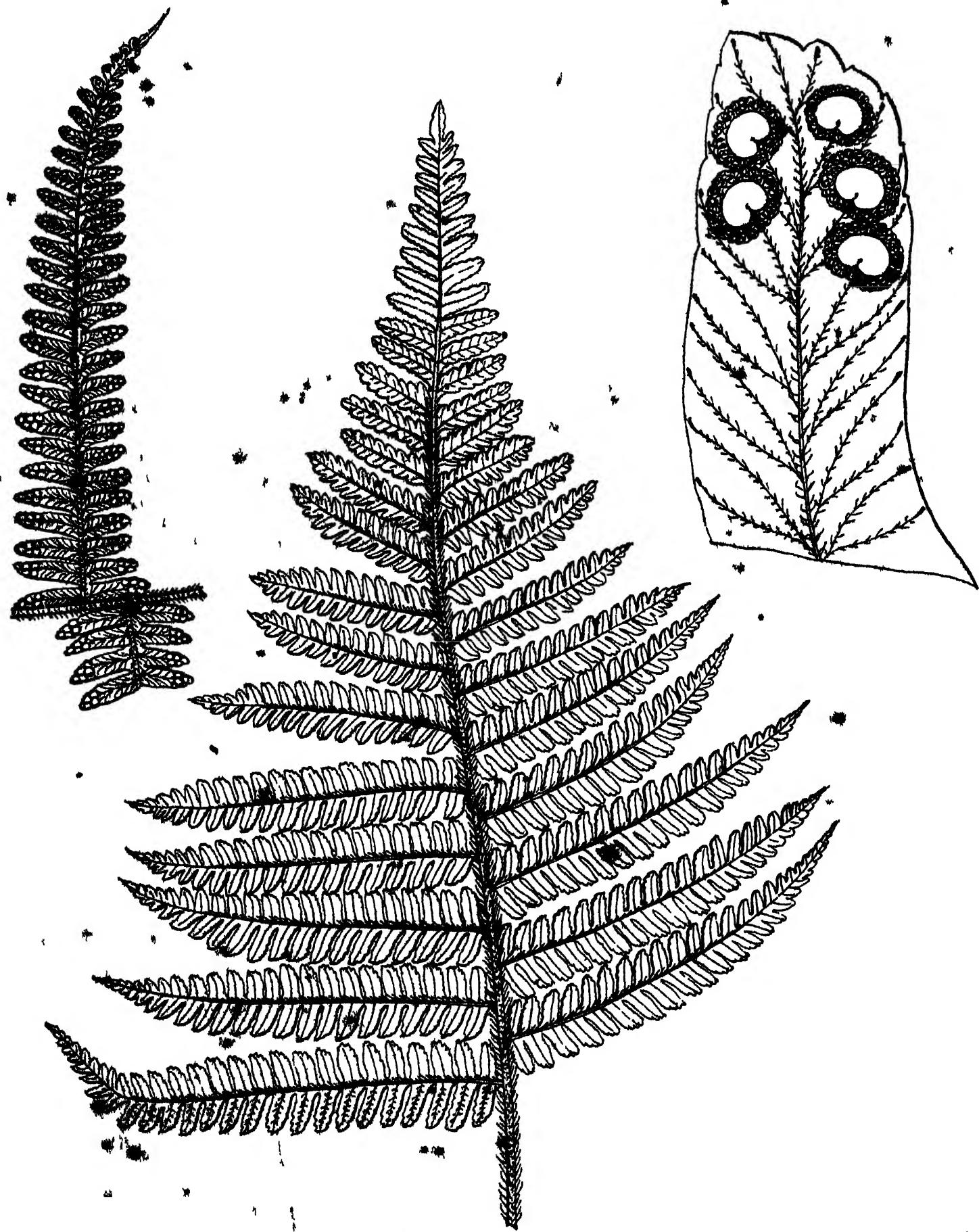
ASPIDIE E

LISTREA APICIFLOR 1 (Hook) Caudex short stout erect clothed above with subulate scales, stipites stout a span to a foot and more long scaly with appressed lanceolate scales at the base the rest and the stout very straight rachis clothed with numerous close pressed scales varying in shape from small ovate to long lanceolate fronds 2 3 4 feet long oblong or sub oval lanceolate acuminate coriaceous membranaceous pinnate pinnae numerous alternate horizontal subfalcate 5 6 inches long often an inch broad from a broad sessile base oblong acuminate deeply even to the rachis pinnatifid (almost again pinnate) segments approximate parallelogram oblong straight obtuse or retuse angulato dentate at the apex veinlets numerous simple or forked, sori 5 6 only at the apex of the frond involucres firm membranaceous reniform costae very paleaceous with appressed subulate scales beneath —*Hook Sp Fil* iv 112 —*Aspidium Hall* Cat n 345 — *Metten Aspid* p 54

The specimen figured is from Sikkim, Himalaya, (Dr Thomson)

Hab Nepal, Sikkim Himalaya (elevation 9000)

PLATE No VI



Saxifraga apiciflora
(Nack.)

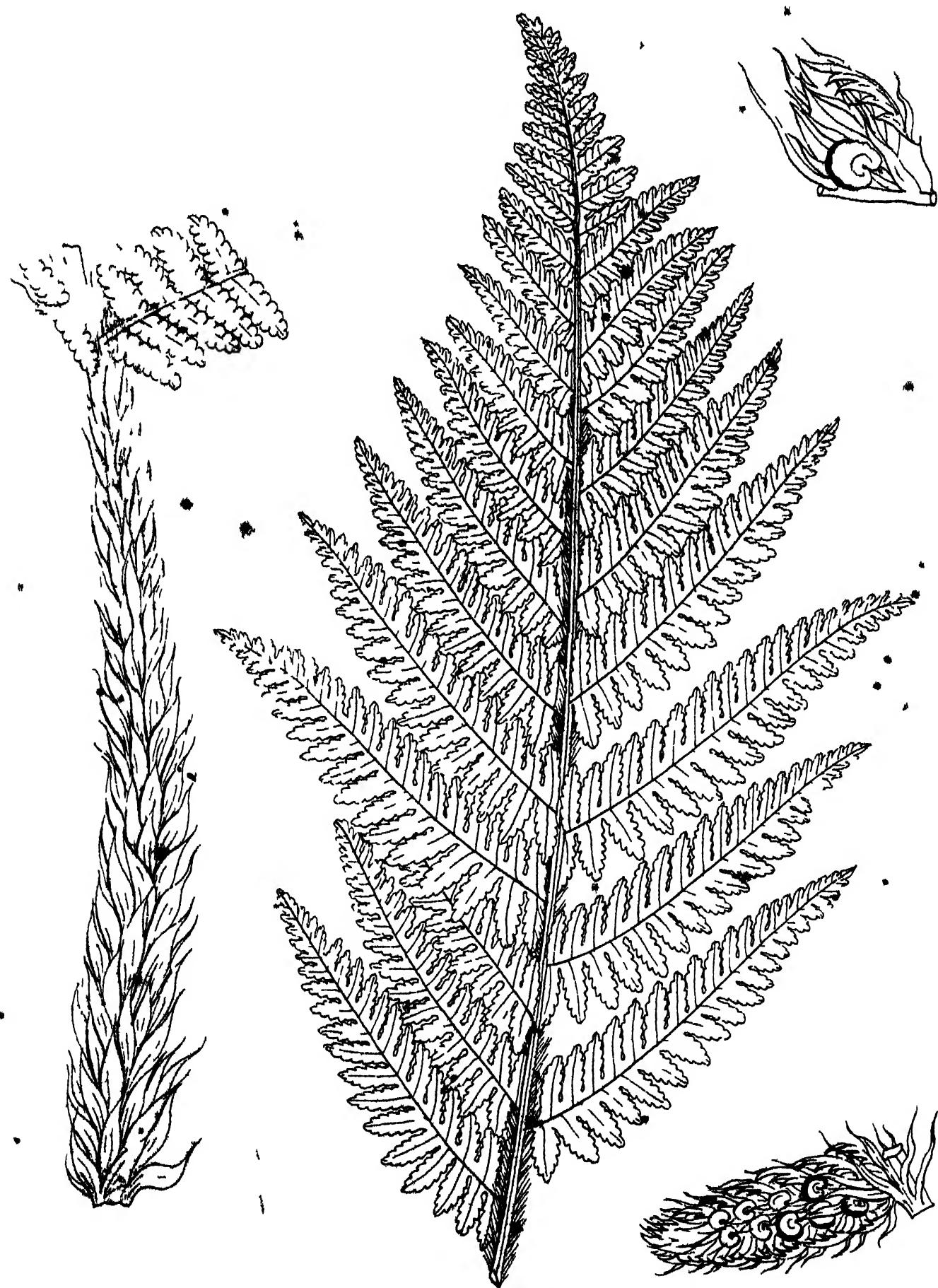
ASPIDIEF

LASTRFA FALCONERI (Hook) Caudex? stipes a foot long very coarse and stout quite squarrose for nearly its whole length with large broad silky ferruginous soft scales mixed with smaller subulate ones these latter only still smaller also clothe the main and secondary rachises fronds 1½ foot long oblong scarcely acuminate firm rigid coriaceous slightly villous bi pinnate pinnæ 4 6 inches long an inch wide are to patent oblong lanceolate pinnules sessile linear oblong $\frac{3}{4}$ of an inch long about half way down pinnatifid with short round entire lobes the margins reflexed, sori rather large copious one to each lobe, involucre brown very membranaceous cordato reniform very convex so as to be almost hemispherical —*Hook Sp fil 1v 123*

The figure is taken from Sir W Hooker's Species Filicium

Hab Kashmir

PLATE No XII



Lastrea Falconeri
(Mack.)

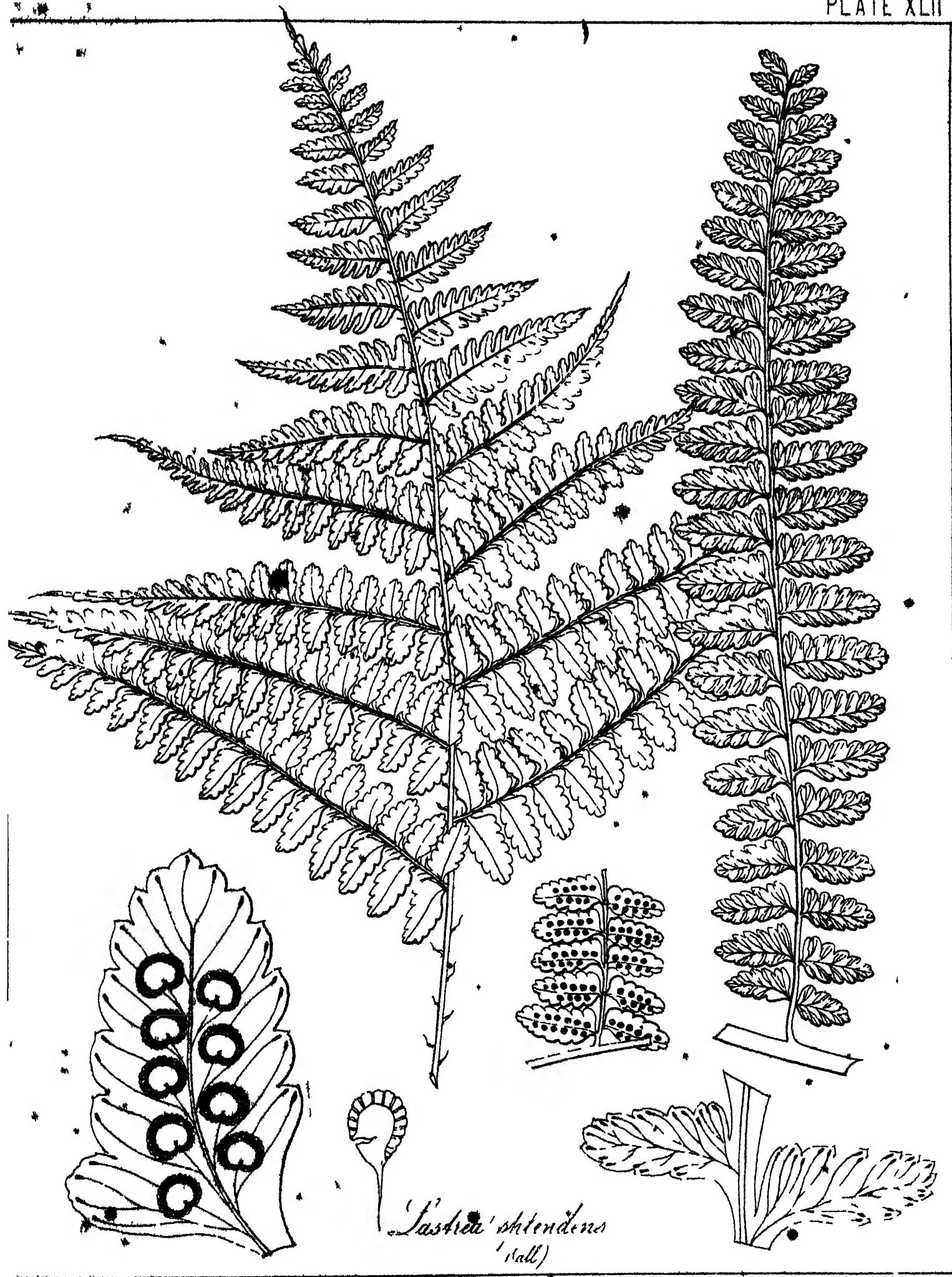
ASPIDEAE

LASTREA SPLENDENS (Hook.) Caudex ?— stipes 1 2 feet (and probably much more) long, $\frac{1}{2}$ $\frac{3}{4}$ inch broad especially at the base more or less clothed with close pressed deciduous scales dark chestnut brown or often (as well as the principal rachis) ebeneous black and polished, frond ample 2 4 feet long coriaceous broad lanceolate acuminate bi pinnate primary pinnae 6 inches to more than a foot long $1\frac{1}{2}$ 2 inches wide subpetiolate oblong finely acuminate and pinnatifid at the very apex, pinnae sessile oblong ovate acute or generally broader at the base and subauricled above the rest crenate or lobato pinnatifid the lobes short obtuse entire or dentate, veinlets 2 3 furcate sori 8 14 large conspicuous forming two lines close to the costule involucres rather large orbicular reniform coriaceous dark brown often paler at the margin —*Hook Sp Pl* n 126 — *Lastrea splendens* Wall in Hook Fl Ms Cat of Ind Ferns n 267 — var β *angustifrons* smaller, stipes black or testaceous brown frond copiously 3 pinnate *Lastrea angustifrons* Moore Ms

The specimen figured is from Sikkim, Himalaya (Dr Thomson)

Hab Sikkim Himalaya Bhutan Malib Pennula — β Nepal

PLATE No VIII



Loxsoma splendens
(Hall)

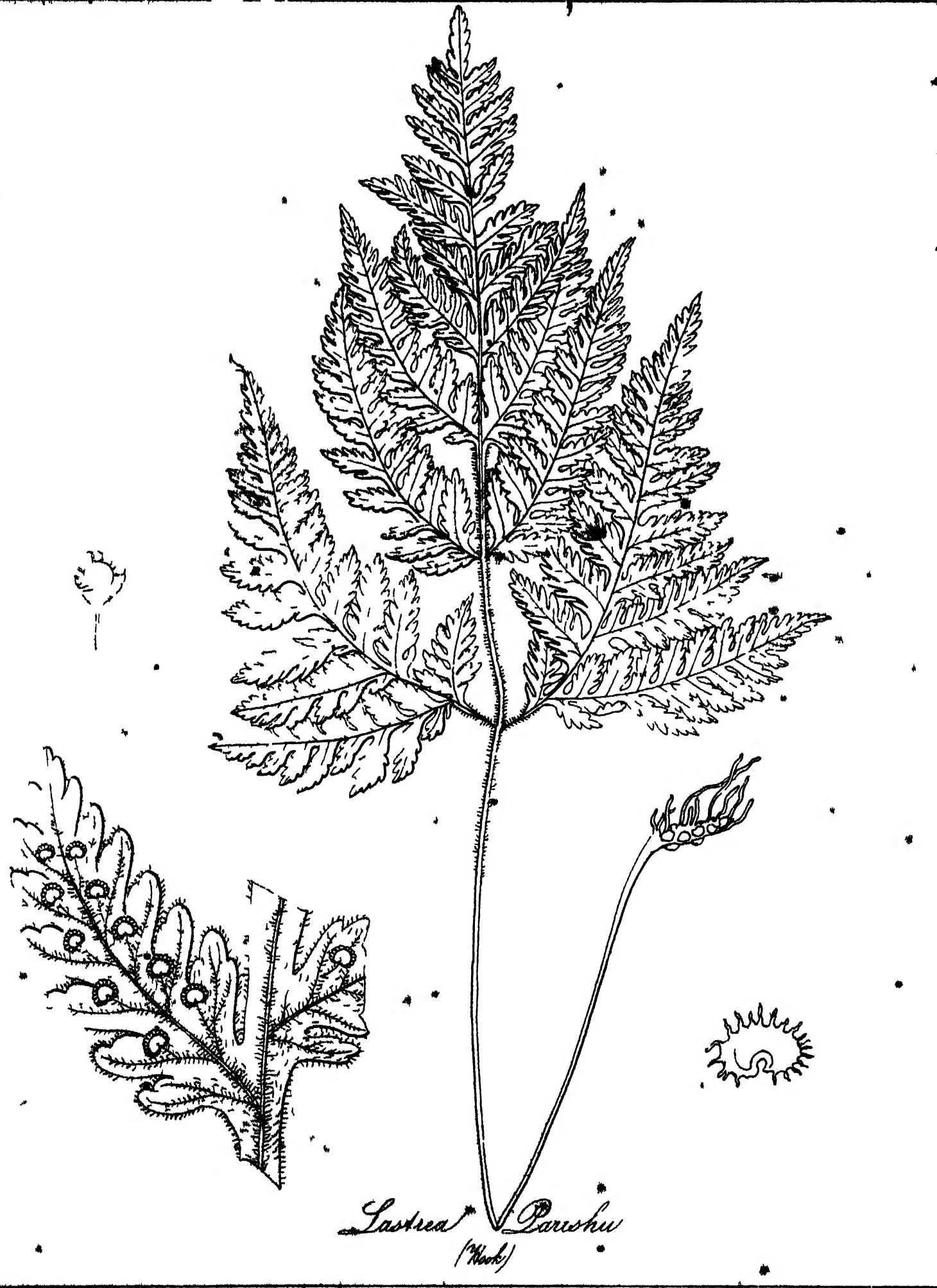
ASPIDIEAF

LASTREA PARISHII (Hook) Caudex creeping, stipes solitary lax soft slender glabrous and quite scaleless a little downy at the summit fronds 4 6 inches long and as much broad pale green pellucid succulent membranaceous when dry, pubescently hairy on the costae pentangular deltoid acuminate ternately tripinnate pinnatifid at the apex primary pinnae oblong acuminate sub opposite deeply nearly to the rachis pinnatifid, inferior ones pinnate at the base and petioled segments and pinnules $\frac{1}{2}$ of an inch long strongly serrated or acutely pinnatifid and all decurrent so as to form a winged rachis basal pair a primary pinnae twice or thrice as large as the rest and remote from them half ovate acuminate the lowest basal pinnae much longer than the rest and more compound, veinlets lax distant twice or thrice forked, sori equidistant between the costule and the margin involucro small rotundato reniform one of the lobes sometimes a little elongated rachis fusco pubescent.—*Hook Sp Fil* iv 131

The specimen figured is from Moulmein (Rev Parish)

Hab Moulmein (shady moist places limestone rocks)

PLATE No XLIII



*

ASPIDIUM

LISTRIFA THELYPTERIS (Presl) Caudex very long slender branched creeping black copiously rooting stipites distant about a foot long, slender staminate black at the base fronds firm membranaceous 1 2 feet long, oblong acuminate glabrous or pubescent on the costae beneath pinnated pinnae sub opposite patent 2 4 inches long sessile linear-oblong acuminate pinnatifid almost to the apex and down nearly to the rachis segments ovate or oblong acute rarely sub falcate quite entire, veinlets simple the lower once or twice forked sori copious nearer the received margin than the costule involucres cordato reniform with glandular hairs at the margin deciduous — *Hedw Sp Fil* iv 83 — *Hook Brit Farns* t 13 — *Aspidium Sw Syn Fil* p 57 — *Willd Sp Pl* v p 249 — *Schb Fil* p 14 52 — *Sm Engl Bot* t 400 — *Metten Aspid p 112* — *Hook and Arn Brit Fil ed* viii p 583 — *Asa Gray Man of Bot* p 526

The specimen figured is from the Khasya Hills

Hab Khasya Hills, Kashmir Man hui Amu — Marshy ground throughout Europe and North America

PI ATL No XII



Lastrea Thelypteris
Pec

ASPIDIEÆ

CYRIOMIUM (See Ferns of Southern India p 41)

YRTOMIUM CADUCUM (Wall) Caudex sub erect stout stipites a foot and more long stramineous very paleaceous with black large lanceolate scales below with a brown edge above these are broader membranaceous lax brown ones fronds coriaceous 1 1/2 to 1 1/2 ft long broad lanceolate acuminate pinnated (or sub bi pinnate) pinna numerous 3-5 inches long 1/2 an inch to an inch wide, falcato lanceolate acuminate unequally so at the base superior base truncated and dilated with a more or less distinct obtuse or acute auricle acutely subaristato serrated not unfrequently lobato pinnatifid and in some inferior pinnae quite pinnated with obovate rather obtuse pinnule veins copious approximate erecto patent pinnate free or with the veinlets more or less combined forming elongated areoles generally including a long free veinlet and sometimes the whole frond is bi pinnate and the veinlets are then always free and the plant has no very distant resemblance to some forms of *Ilystichum aculeatum* sori large scattered involucres very conspicuous orbicular peltate but sometimes with a small sinus — *Hook Sp Fil* iv 39 — *Wall Cat* n 381 — *Hook et Grev Ic Fil* t 171 — *Mettler Aspl* p 3 — *Yrtomium P. Tert Pterid* p 77 — *Moore Ind Fil* p 216 (excluding the S American stations) — *Lastrea Hookeriana Ir Tert Pterid* p 77

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab. Nepal Sikkim Khasya Assam Bhootan

PLATE No XLV



Cyattonium aduncum
(Wall)

ASPIDIEÆ

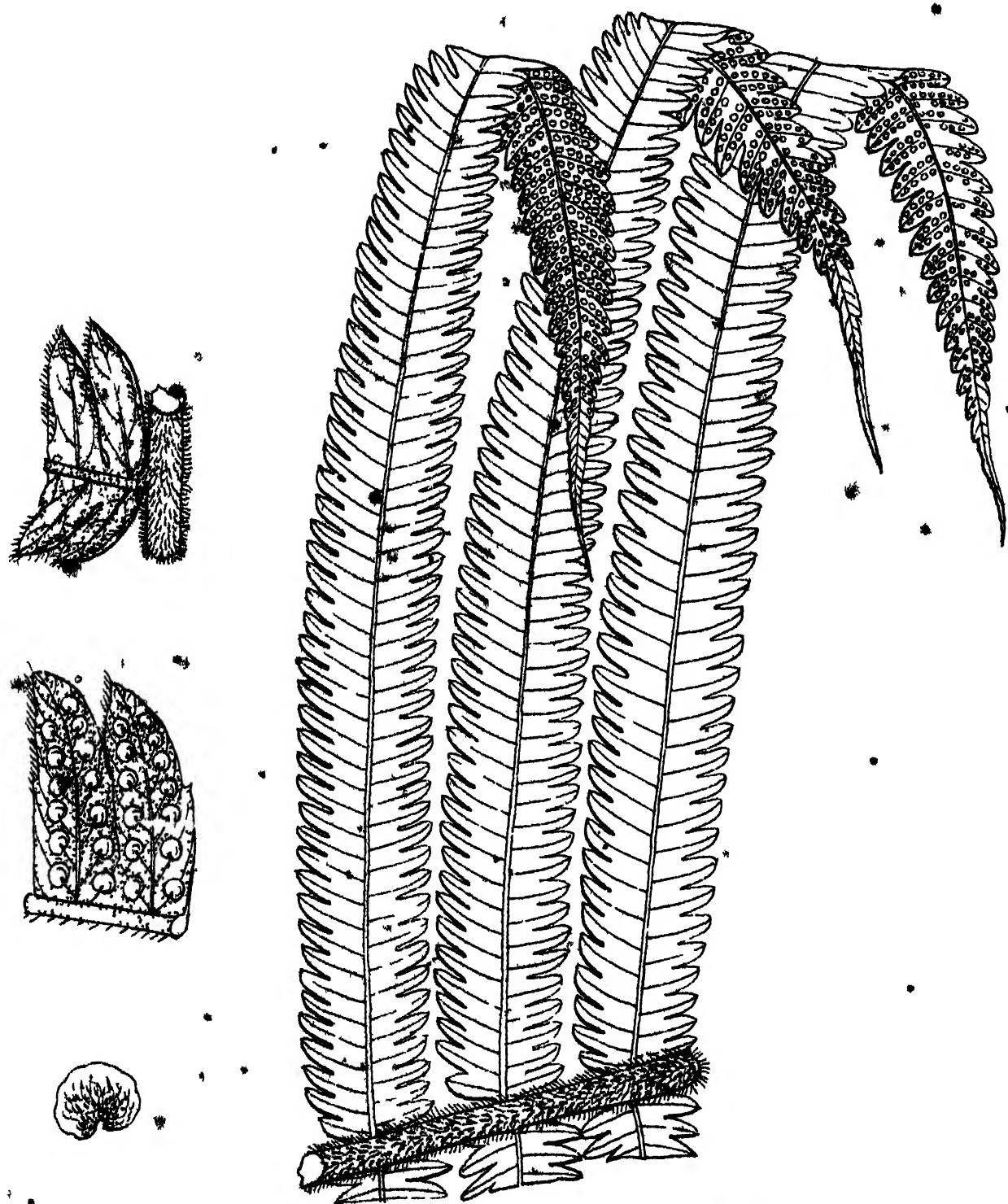
NEPHRODIUM (See ' Ferns of Southern India p 29)

NEPHRODIUM HIRSUTUM (J Sm) Stipes and principal portion of the rachis villous with long soft close pressed hairs fronds 3 4 feet long ovato lanceolate acuminate membranaceous 1½ foot and more wide pinnated slightly hairy on the costa above glabrous and minutely glanduloso resiniferous beneath pinnae very numerous approximate sessile 10 inches long in the broadest part of the frond and nearly an inch wide, linear oblong finely acuminate truncated at the base uniformly pinnatifid about half way down to the costa, at the base beneath on the rachis is a large conspicuous disciform scale or gland chiefly present on the lower half of the frond segments ovato oblong sub falcate entire rather obtuse one or two of the lowest pairs of veinlets combined sori most copious on the upper half of the frond near the middle of all the veinlets involucres glabrous—Hook Sp Fil iv 170—J Sm in Hook Journ Bot in p 412 (name only)—Ir Fpimel Bot p 48—Aspid, Metten Apud p 107

The figure is taken from Sir W Hooker's "Species Ilicum"

Hab Assam, Luzon

PLATE No XLVI



Nephrodium hispidum
(1 Sm.)

ASPIDIEÆ

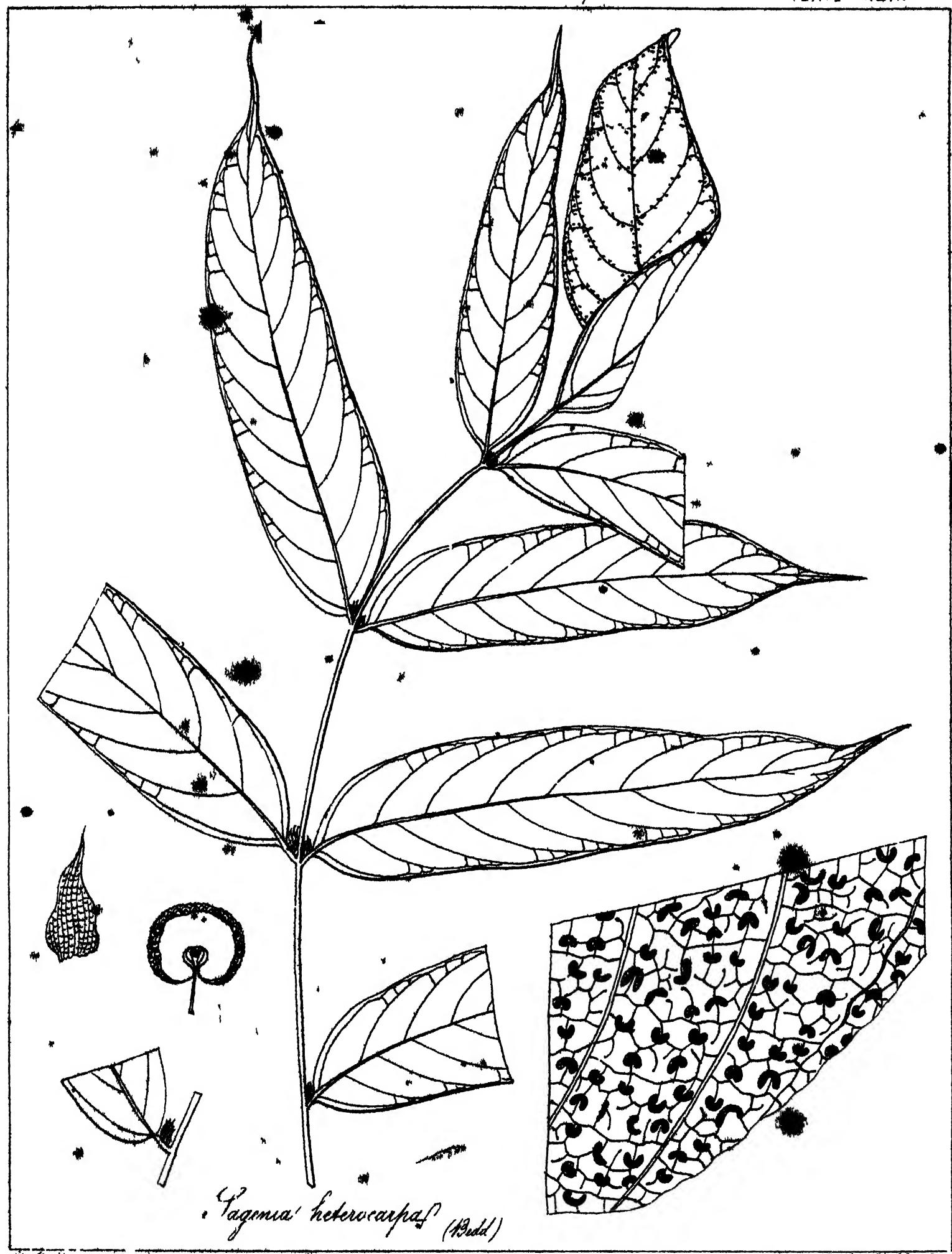
SAGENIA (See ' Ferns of Southern India p 27)

SAGENIA HETEROCARPA (Bedd) Fronds coriaceous membranaceous pinnate pinnæ opposite or sub opposite lanceolate entire very finely acuminate, very shortly petiolate 6 inches long by 1½ inch wide petioles furnished with a small scaly bud on the upper side at the base of the pinnæ costa prominent primary pinnate veins conspicuous falcate with their areoles divided into 9 12 areoles by the transverse flexuose secondary veins within which are included numerous free simple or forked veinlets, sori copious minute, indusium very various in shape generally hippocrepiform or reniform but sometimes athyrioid or asplenoid

The specimen figured is from the Khasya Hills, (Dr Thomson)

My specimens are marked by Mr Moore "new species near *S. Menyanthidis*"

PLATE No ALVII

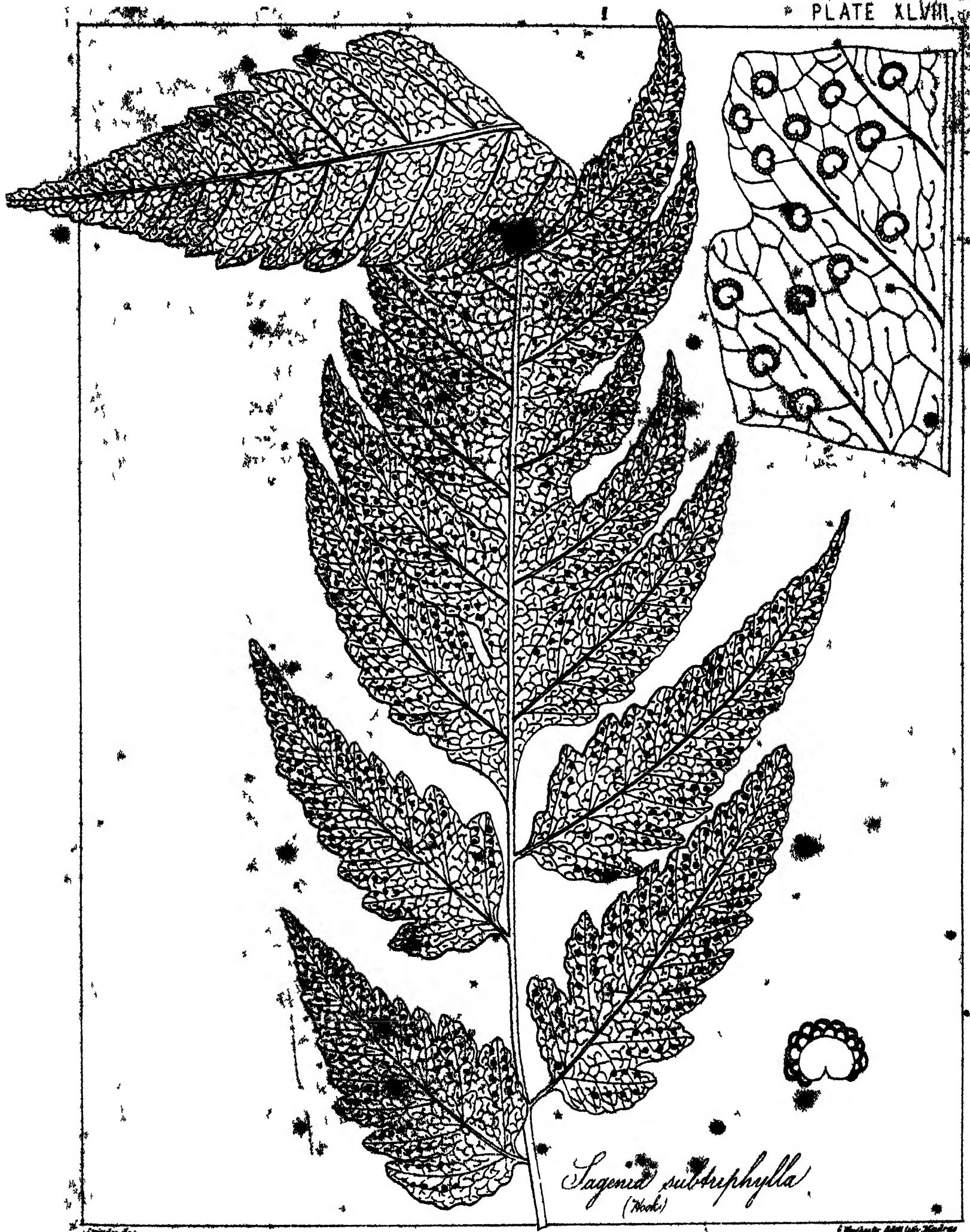


ASPIDIÆ

SAGENIA SUBTRIPHyllA (Hook) (See Ferns of Southern India p 81 and Plate ccxlii)

The specimen here figured is from Moulmein (Parish) it is 3 feet high and the lowest pair of pinnae are a foot long, it is considered by Sir William Hooker to belong to the same species as the small form found in Ceylon (Plate ccxlii of "Ferns of Southern India")

PLATE No XLVIII.



Sagenia subtriphylla.
(Hook.)

LOMARIEÆ

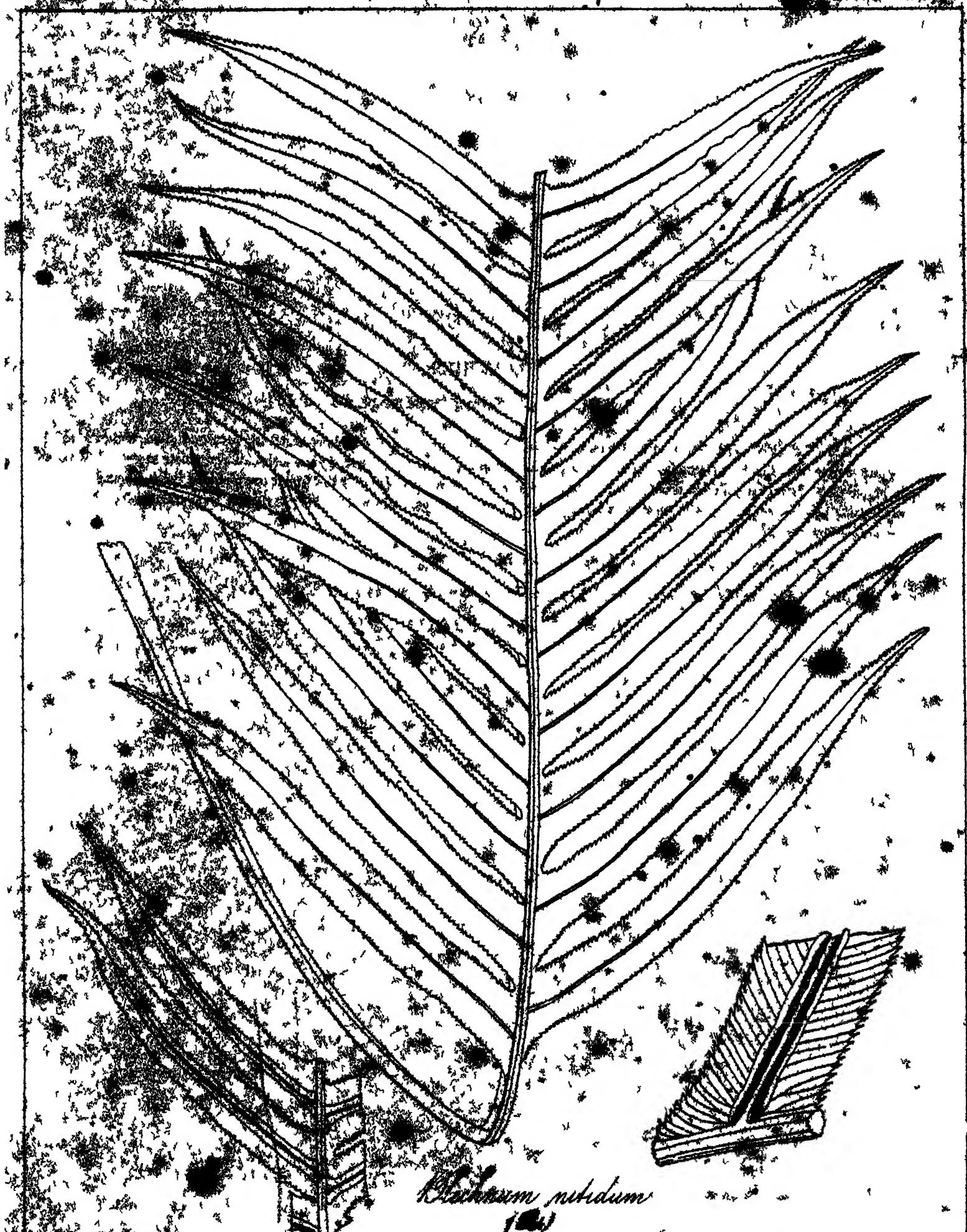
BLECHNUM (See 'Ferns of Southern India' p 10)

BLECHNUM NITIDUM (Pr) Caudex —— 7 fronds ample 1½ 3 feet oblong ovate in circumscription truncate at the base firm coriaceous pinnatifid almost to the rachis segments very numerous approximate linear lanceolate acuminate more or less falcate sharply serrated lower ones almost equal in length to those above them and free (so that the fronds are pinnated below,) veins very close simple patent sori close to the costa continuous from the base to near the apex, stipes elongated nearly free from scales, rachis 2 furrowed beneath —*Hook Sp Fil* ill. 44

The figure is taken from Sir W Hooker's *Species Filicium*

Hab. Mishmee, Assam, Luzon Isle of Sorzogon South Brazil Guam Mariana Islands

PLATE № XLIX



Platium nudum

LOMARIE E

BLECHNIDUM (Moore Index Filicum p clv, (Blechnum Sp Hooker)

On char. *Sori* indusiate linear continuous on a transverse receptacle approximate to the costa. *Indusium* linear opening along the inward side. *Leins* springing from a central costa immersed *venules* reticulated forming a series of large angular areoles next the costa, other narrower ones often extended nearly to the margin. *ultimate veinlets* free and thickened at the apex.

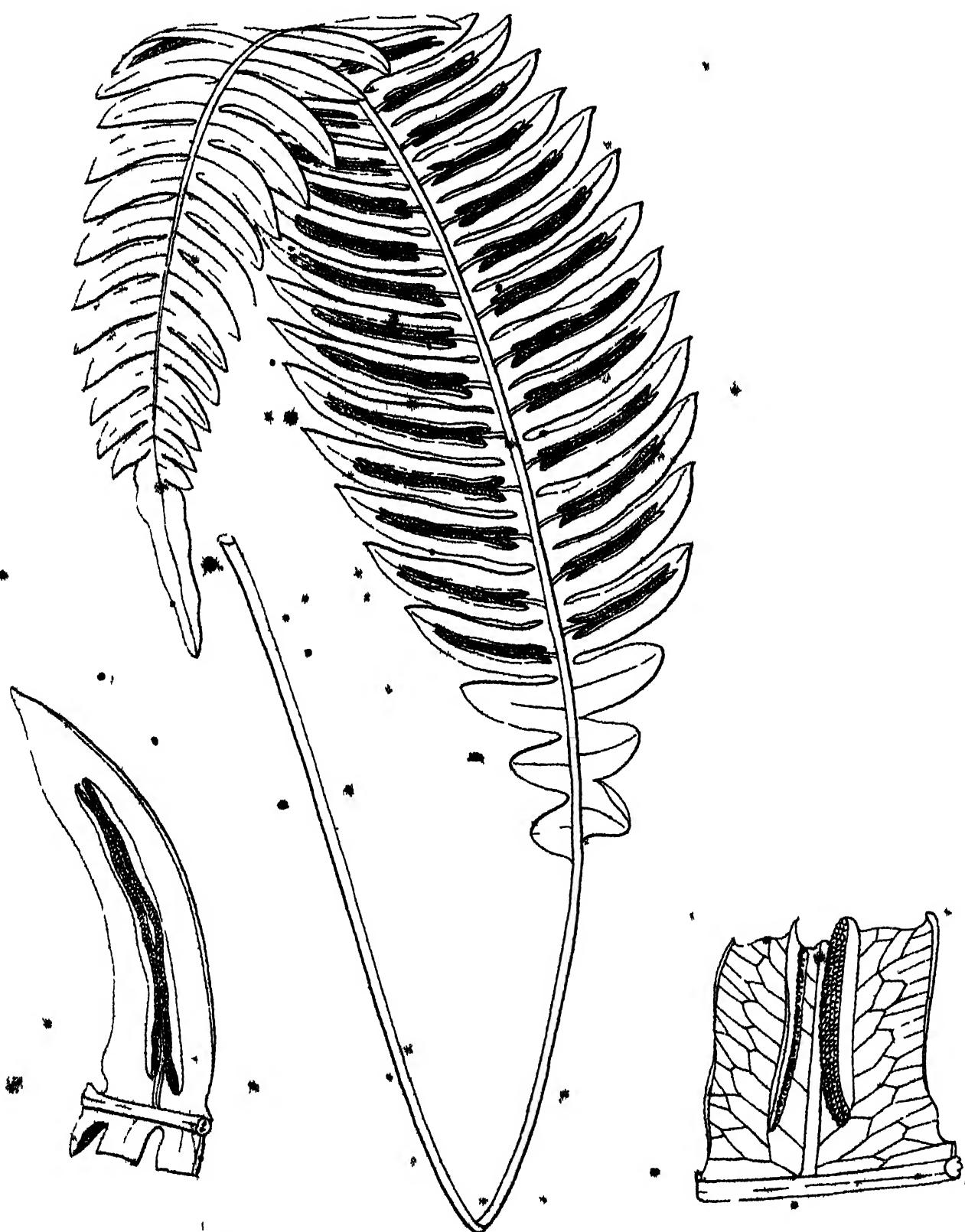
Fronds pinnatifid sub coriaceous. This genus only differs from Blechnum in its reticulated venation (Moore)

BLECHNIDIUM MELANOPUS (Hook) Caudex — ? frond spathaceous (and more?) broadly falcato-lanceolate glossy sub coriaceous pinnate pinnae very approximate from a rather broad adnate base linear oblong falcate somewhat acute the margin entire narrowly revolute uppermost ones gradually confluent into a lanceolate elongated lobe the lowest 3 4 pairs suddenly diminished short very obtuse sub auriculate at the superior base veins internal reticulated forming large angled areoles next the costa, narrower oblique ones often extending to the margin *ultimate veinlets* free and clavate at their apex just within the margin. *sori* quite close to the costa continuous not reaching to the apex of the pinnae stipes (about a span long) and lower half of the rachis beneath black — Hook. 'p. 711 iv 64

The figure is taken from Sir W. Hooker's Species Filicum

Hab. Khasia Hills

ITALI N. I



Blechnum melanopus
(Hoover)

PLATYLOMÆ

PLATYLOMÆ (Kunze Schleb Supp n 61)

(Lomaria sp. auct. — Aerostichis sp. II ill. h — Stenochlaena sp. auct.)

Gen char. *Sori* spuriously indusiate marginal short oblong the *receptacles* of the same form terminal on the veins contiguous the *obliquely* ringed spore cases becoming laterally confluent into a linear mass on each side of the costa of the contracted pinnae *Indumentum* (spurious) formed of the inflexed attenuated margin. *Leaves* simple or forked from a central costa, *venules* parallel tree their spores longitudinally soriaceous in the fertile fronds (Moore)

Fronds pinnate the fertile contracted stipes furnished at the base with spongy glands and base of the pinnae beneath sometimes furnished with a gland. The oblique ring to the spore cases is anomalous among the Polypodiaceæ and in this peculiarity the genus approaches the Cyatheaceæ

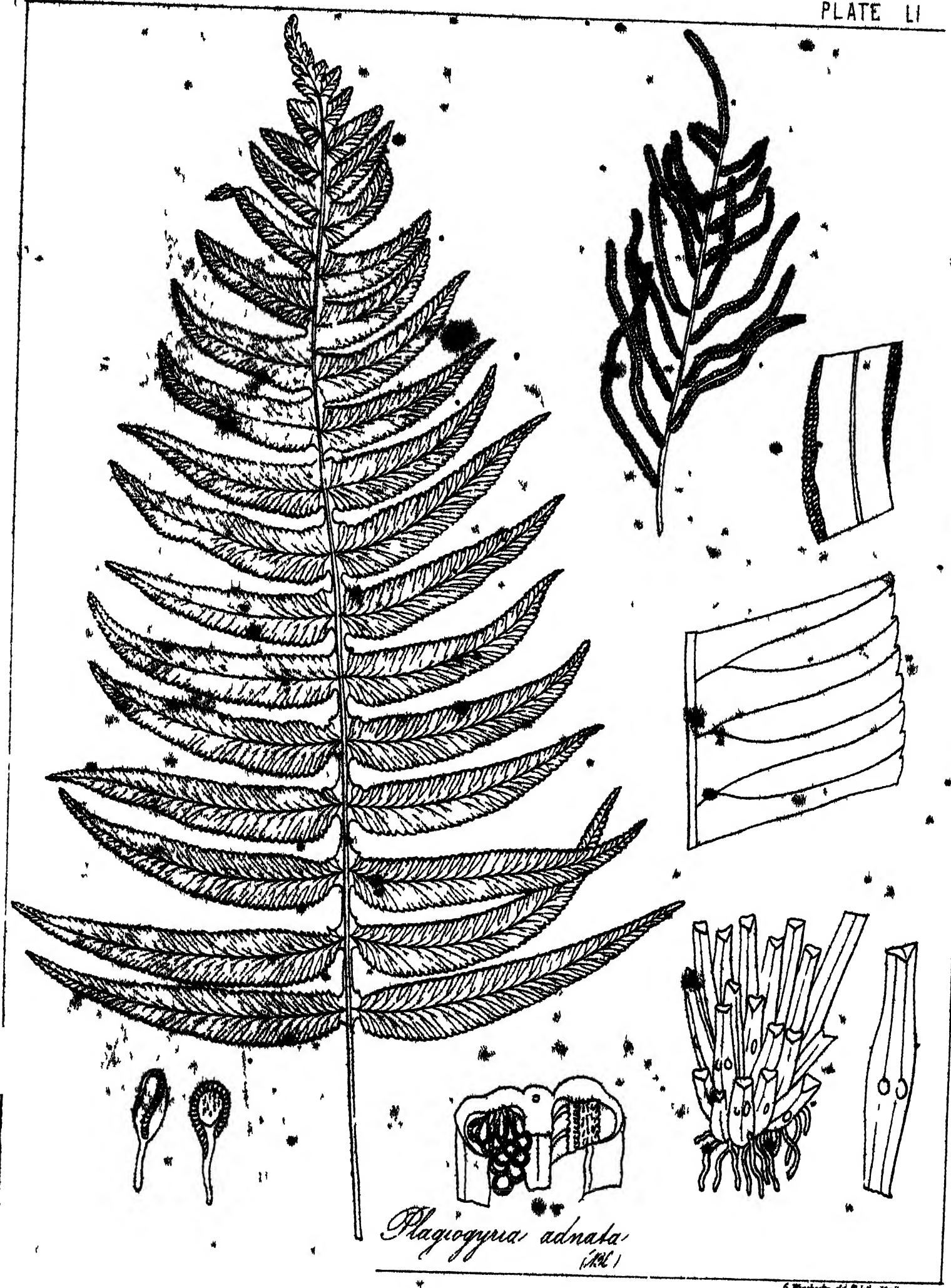
This genus is placed by most authors in the tribe *Lomariæ* with which it has much natural affinity and Sir W. Hooker makes it only a section of that genus. Mr. Moore however follows Kunze and Mettenius in separating it and points out that it can have no real structural affinity with *Lomaria* as the sori are arranged in short lateral contiguous lines along the ends of the veins and parallel with them as in *Platylomæ* whereas in *Lomaria* the receptacle of the sori is linear continuous and transverse to the venation

PLATYLOMÆ ADNATA (Blume) Caudex stout short stipes cæspitose elongated brown triquetrous a span to 1¹/₂ foot long slender naked at the base dilated and subcarnose furnished with orbicular spongy glands fronds a foot and more long ovato lanceolate chartaceous membranaceous sterile ones pinnatifid almost to the rachis below pinnated but all the pinnae united by a narrow wing segments mostly opposite distant lanceolate much acuminate more or less falcate the inferior base round superior base extended upwards the margins entire or obscurely toothed the apex strongly serrated fertile frond pinnated pinnae alternate distant linear sessile either obtuse sori covering the whole under side between the costa and the brown membranaceous very distinct involucro — Hook. S. Fil. in 19 — Bl. Kn. Fil. Jav. p 205 — *Lomaria hispidum* Hook. Herb — *Platylomæ scandens* Metten in Plagio. p 9?

The specimen figured is from the Khayyî mountains (Dr. Thomson)

Hab. Jura Khayyî Hills (elevation 1,000 to 1,000 feet.)

PLATE No. 11



Plagiogyria adnata
(L.)

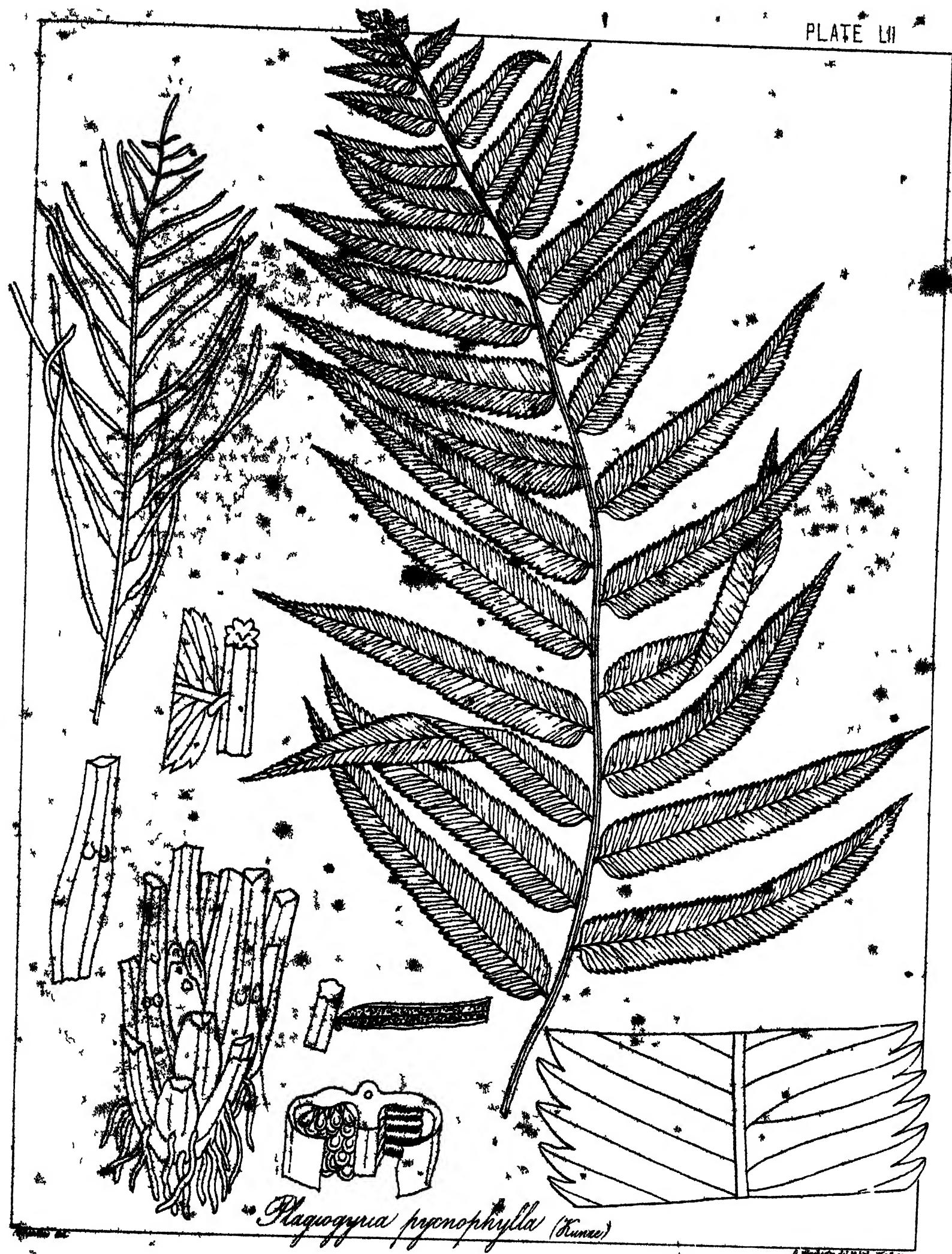
PLATYLOMÆ

PLAGIogyria PYCNOphyLLA (Kunze) Caudex stout erect very woody and having many wiry roots fronds fascicled stipites sub-quadrangular 2 furrowed in front (as is the rachis) at the base dilated fleshy triquetrous subalate bearing spongy glands fronds 1 2 and more feet long *sterile* ones sub chartaceous opaque brown when dry oblong ovate pinnated for its whole length except that the small terminal ones are confluent into a lobed (or pinnatifid) and finely acuminate and serrated apex pinnae horizontally patent sessile or very nearly so approximate narrow oblong lanceolate very finely almost caudately acuminate, the base very obtuse and truncate (neither dilated nor contracted) at the base beneath furnished with one or two prominent glands (sometimes wanting) the margin very minutely serrulate the caudate apex strongly serrated veins numerous closely placed simple and forked *sterile* fronds narrower pinnated pinnae linear obtuse on very short petioles with a gland on the under side involure at first vaulted conspicuous membranaceous brown at length forced back by the capsules — *Holm* Sp *Fl* m 21 — *Kze* in *Bot Zeit* iv p 143 — *Acrostichum triquetrum* *Wall* Cat n 23 in part — *Stenochlaena* ? *pycnophylla* *P* *Fpum* *Bot* p 165 — *Lomaria scandens*, *De Vries* in *Herb* *Az* — *L. callosa* *Fée* *Gen* *Fl* p 70 — *Plagiogyria adenopus* — *T. Moore* *Ms*

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab. Nepal, Assam, Khasya Bhotan, Sikkim (7—10,000 feet) Java

PLATE No. LII



Plagiopteris pycnophylla (Kunze)

PLEUROGRAMMÆ

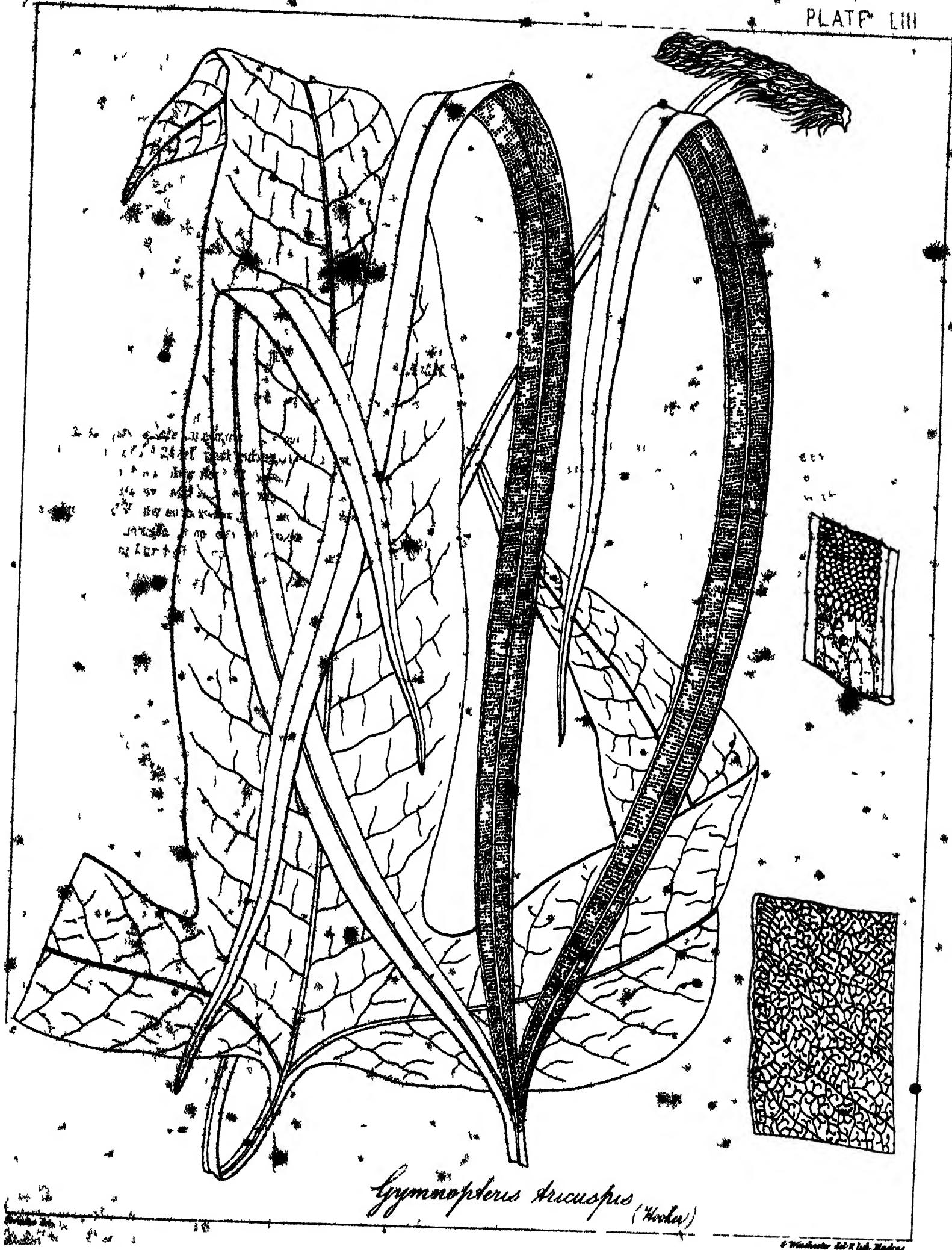
GYMNOPTERIS (See Ferns of Southern India p 15)

GYMNOPTERIS TRICUSPIS (Hook) Caudex creeping clothed with subulato setaceous ferruginous scales, stipites 1 foot long $1\frac{1}{2}$ of the fertile frond sterile frond sub coriaceo membranaceous sub triangular cordate 8 10 inches long 10 12 inches wide at the base including the spread of the lateral lobes deeply trilobate lateral lobes 5 inches or more long, $1\frac{1}{2}$ inch wide horizontally patent, intermediate one 6 inches and more long, 2 inches wide, all of them oblongo lanceolate acuminate entire unicostate, venation manifest, costules distant indistinct connected by transverse irregular curved veins forming large areoles enclosing lesser ones which have copious free branched and divaricating veinlets fertile fronds much elongated but contracted tripartite nearly to the base, segments scarcely $\frac{1}{2}$ an inch wide linear strap shaped acuminate lateral ones 9 10 inches long erecto sub patent, intermediate one a foot and more long, sori universal except on the costa —*Hook Sp Fil* v 272 —*Anapausia Moore*

The figure is taken from Sir W Hooker's "Species Filicum"

Hab Sikkim—Himalaya, (hot valleys)

PLATE No LIII



Gymnopeltis strigulosa (Hedw.)

6

TÆNITIDE E

Levæs uniform reticulated without free included veinlets

TÆNITIS (Willdenow Swartz Synops Fil 3 24)

(Pteropsidis sp Desvaux — Diagramma Kunze — Pteris sp Auct — Antrophy Sp Auct)

Gen clair Sori non indusiate linear continuous or interrupted the receptacles sub marginal or medial superficial or somewhat immersed *Levæs uniform reticulated forming elongated longitudinal or oblique areoles without included free veinlets*

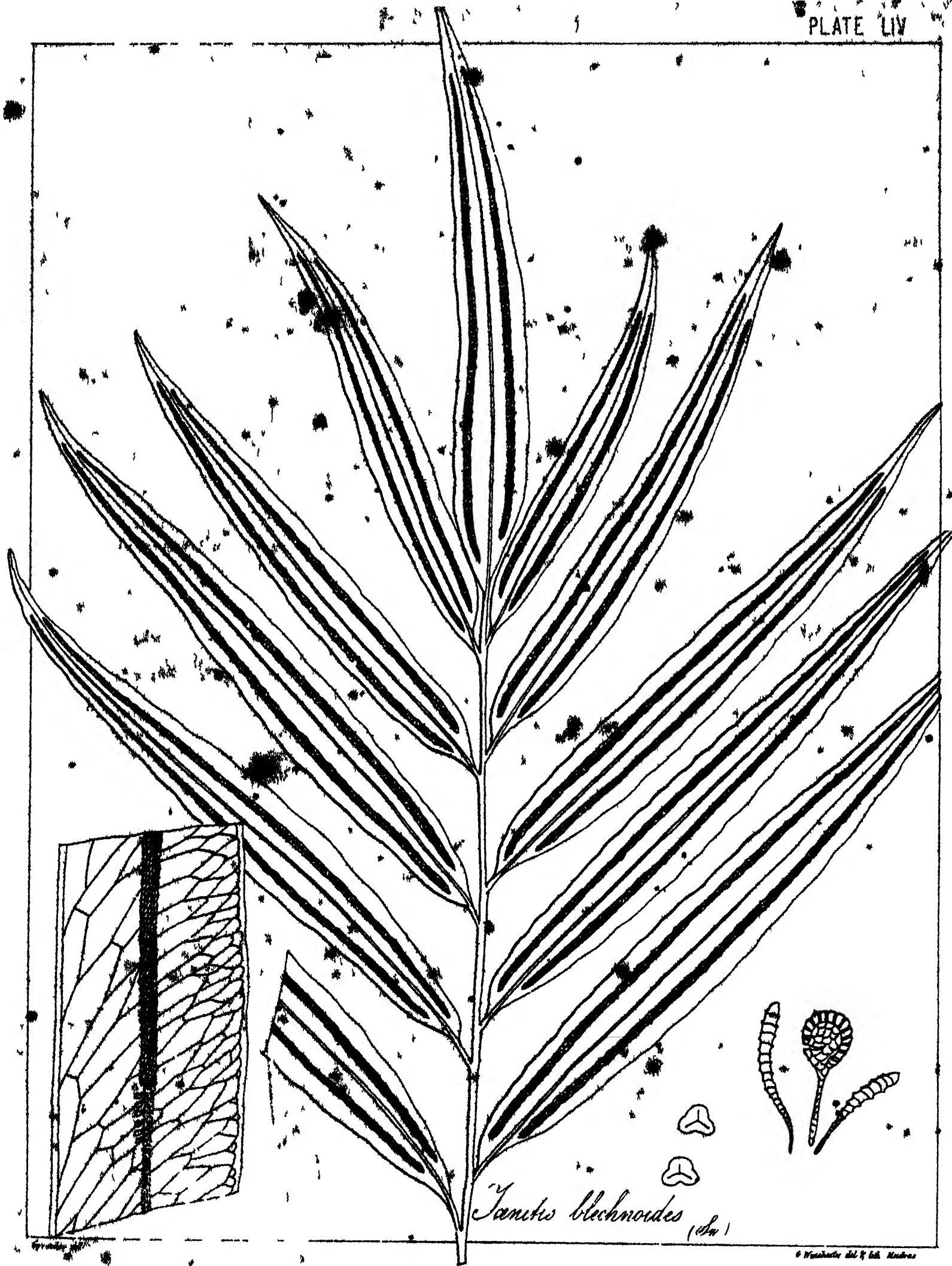
I ronde simple lobate or pinnate rigid Rhizome creeping (Moore)

TÆNITIS BLECHNOIDES (Sw) Caudex creeping nearly as thick as a writing pen setose stipites approximate 8 12 inches long thickened and setose at the base fronds 10 inches to 1 foot and more long (rarely when young yet soriferous simple) coriaceous sub membranaceous generally dimorphous pinnated pinnae a span or more long entire at the margin sterile fronds with 7 broad lanceolate suddenly acuminate pinnae fertile pinnae more numerous 10 16 linear lanceolate gradually attenuated at the base lower ones sessile sori continuous or interrupted veins copiously anastomosing areoles oblique oblong veinless — Hook Sp Fil v 187 — Sw Syn Fil pp 24 and 220 — Willd Sp Pl v p 13 — Bl Jd Jai p 70 t 28 f 2 and t 29 — Fr. Littor p 26 — Tænitis pteroides Schk Fil p 21 t 6 — Spieng Analect iii p 374 t 10 f 106 — Pteris blechnoides Willd Phytogr p 13 t 9 f 3 — Var interrupta much smaller, sori often interrupted I interrupta Wall Cat n 112 — Hook and Grev Ic Fil #62

The specimen figured is from Burmah (Rev Parish)

Hab Malay Peninsula and Archipelago Penang Luzon Borneo Malacca and Tavoy Singapore

J L A I L No LIV



Tanis blechnoides (L.)

TÆNITIDEÆ

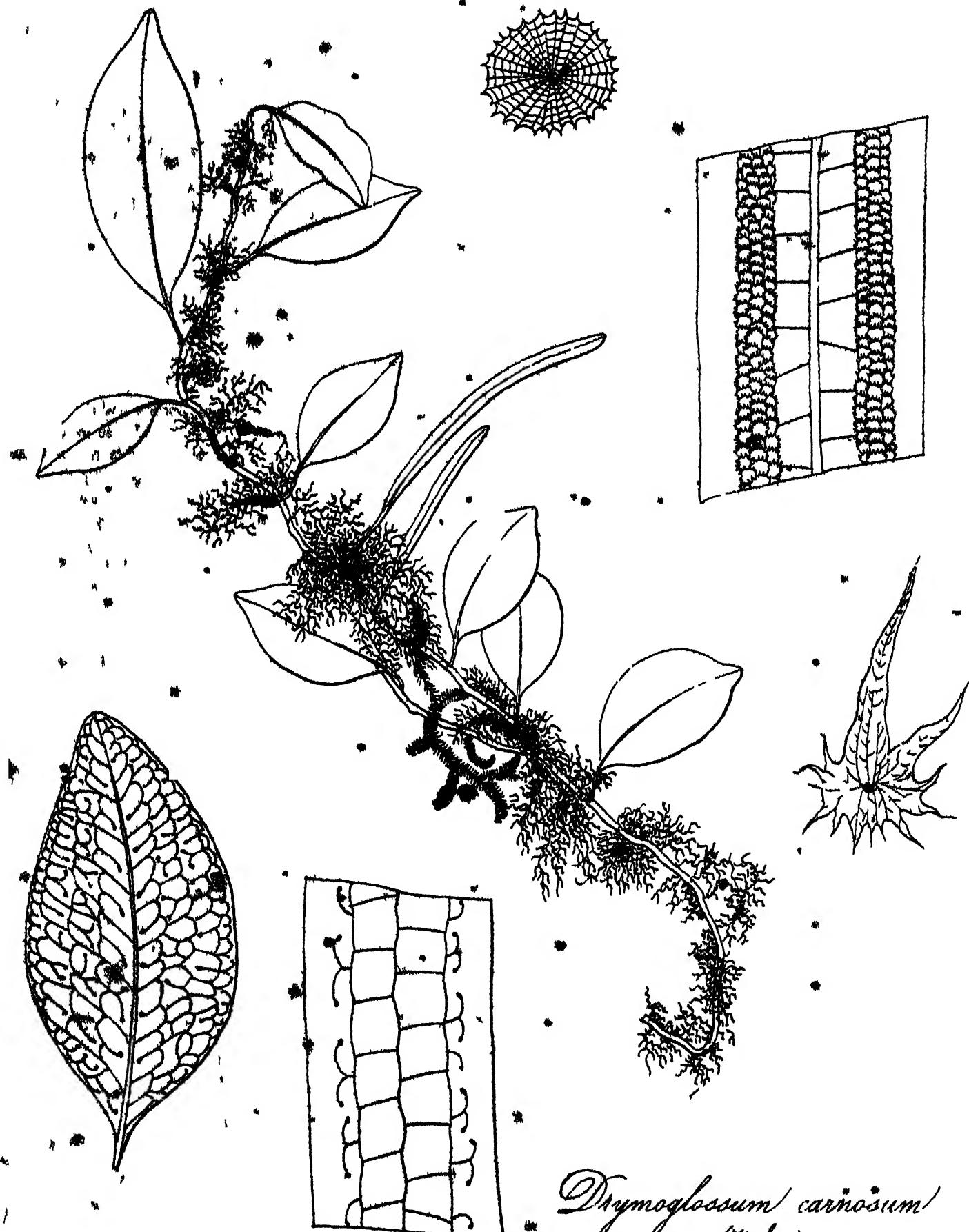
DRYMOGLOSSUM (See Ferns of Southern India p 18)

DRYMOGLOSSUM CARNOSUM (Hook) Caudex long filiform wiry clothed with peltate toothed scales, stipites 2 lines to 1 inch long (in the *fecund* frond) distant slender fronds simple of two kinds *sterile* one from $\frac{1}{2}$ an inch (and then generally orbicular or sub cordate) to 2 and even 3 inches long and then elliptical or obovate or spathulate or even lanceolate and acuminate thick and fleshy coriaceous when dry faintly costate on the under side veins anastomosing the areoles including free generally simple veinlets *fecund* fronds 1 $\frac{1}{2}$ $2\frac{1}{2}$ inches long linear spathulate obtuse sori linear continuous forming a line intermediate between the costa and the margin soon confluent and representing one broad band nearly as broad as the frond when young covered by numerous peltate pedicellated scales —Var *major* fronds 1 2 inches long, sterile ones elliptical or obovate spathulate rarely lanceolate —*Hook Sp Fil* v 189 —*Hook Gen Fil* t 78 A —*Fee Vittar* p 29 —*Nothochlaena* ? (*Tenitis* ?) *carnosa* *Wall Cat* n 131 —*Lemmaphyllum*, *Pr Epim Bot* p 108 —*Tenitis Metten*

The specimen figured is from Sikkim (Dr Thomson)

Hab Nepal Sikkim Loochoo Island, and Kekeat Island Japan, a smaller form (var *minor* *Hook*) is found in Japan, North China, Fort Hamilton, and Formosa

PLATE No LV



Drymoglossum carnosum
(Hawkei)

VITTARIEÆ

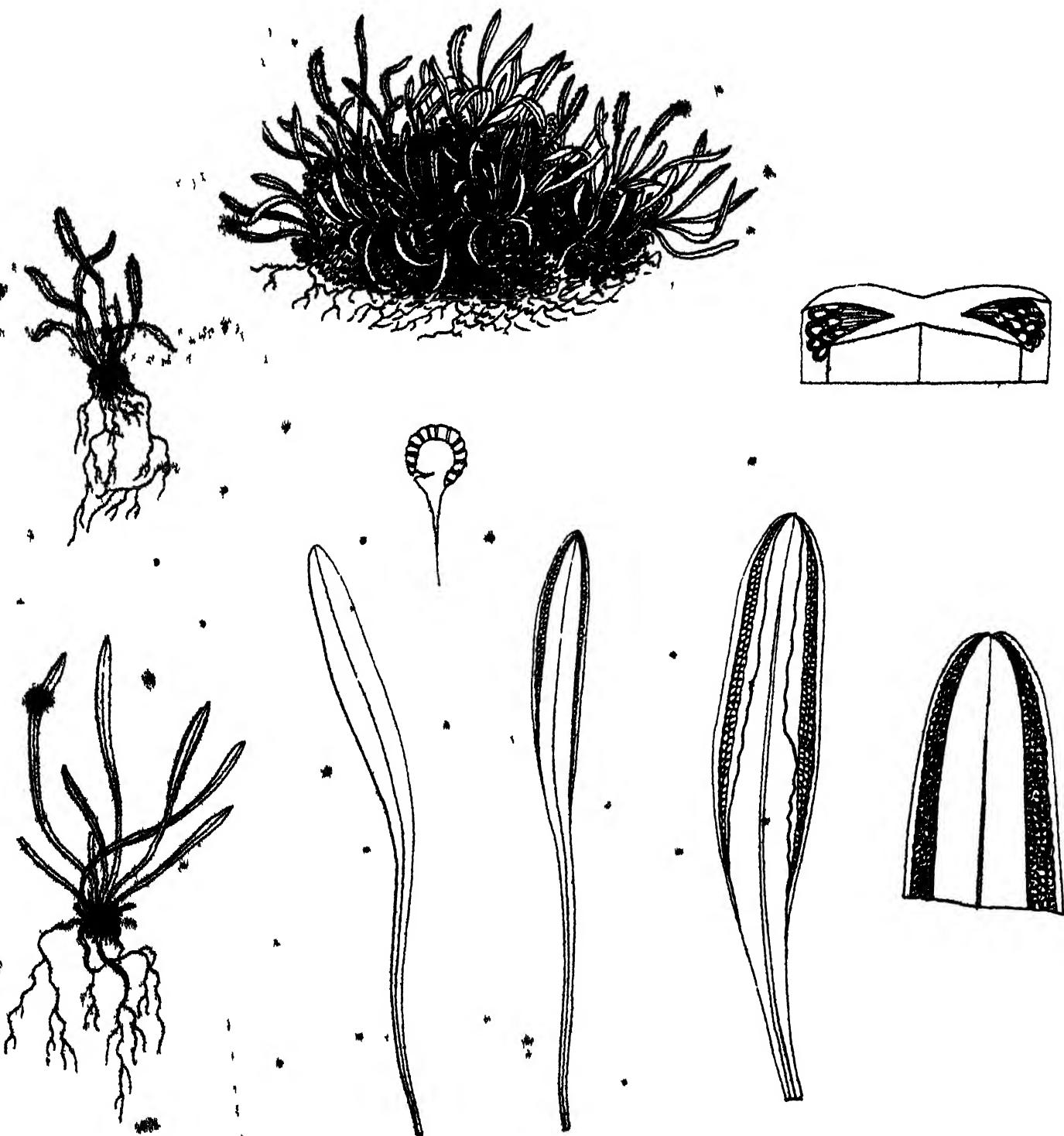
VITTARIA (See 'Ferns of Southern India' p 6)

VITTARIA MINOR (Fée) ' Fronds linear costate obtuse tapering at the base into a short stipe, sori apicular broad exactly marginal in a deep sulcus, sporangiasters none —Var β *minima* Hook fronds 1 inch long less than $\frac{1}{2}$ a line wide.—*Hook Sp Fil*
v 183

The specimen figured is from Moulmein (Parish)

Hab Moulmein, another variety of the same species is found in Borneo and in the Philippine Islands

PLATE No LVI



Vittaria minor
var. *pumila* (Hedw.)

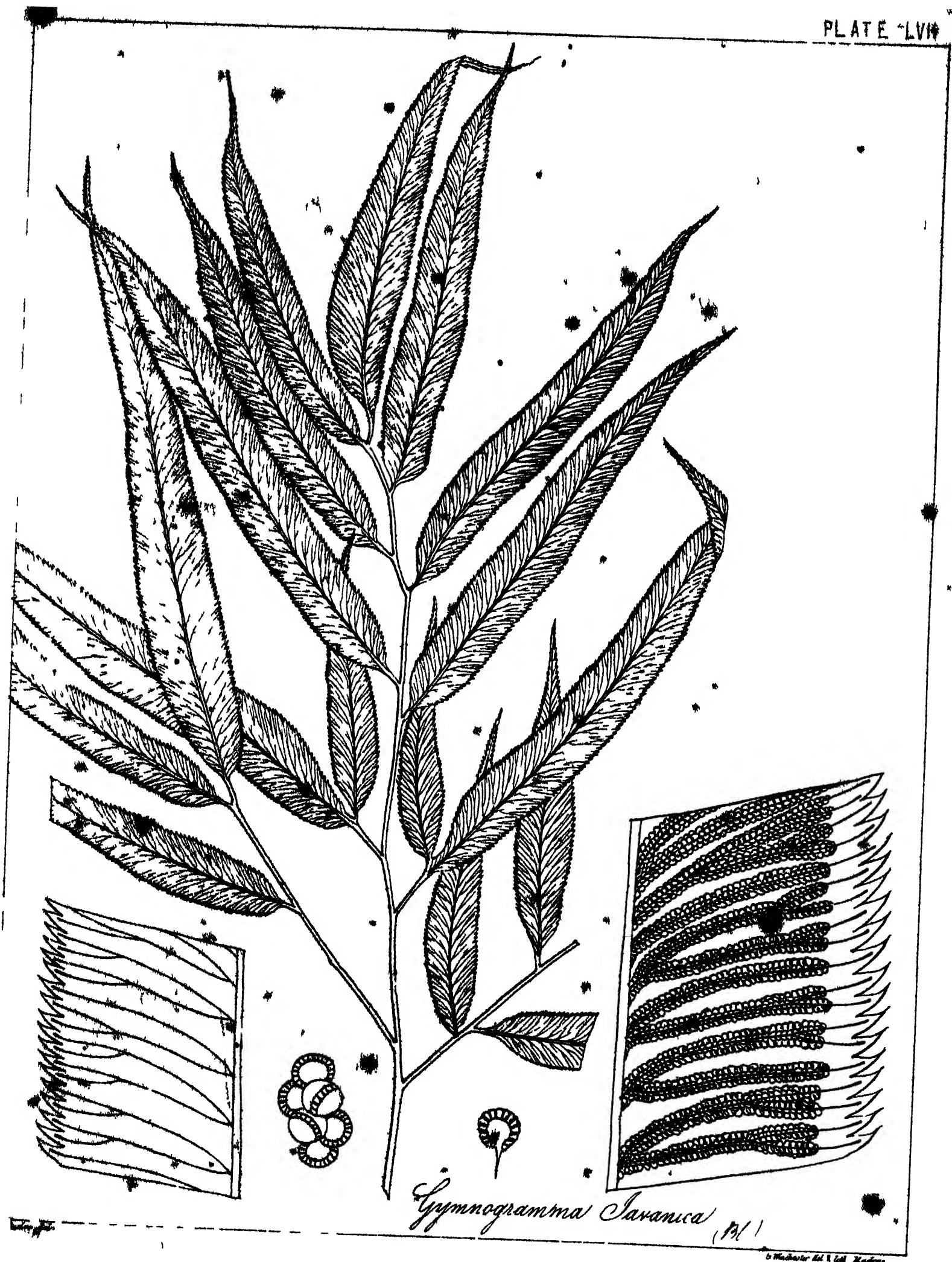
GYMNOCRAMMEA

GYMNOCRAMMA (See 'Ferns of Southern India' p 77)

GYMNOCRAMMA JAVANICA (Bl) (See 'Ferns of Southern India' p 77)

The specimen here figured is from Dalhousie (Col Dyas) it is very different in appearance to the Ceylon fern figured in Plate ~~xx~~ xii of this work being much more compound and with smaller pinnae it is the *G. Javanica* of Blume the Ceylon plant being the *G. simulata* of that author but W Hooker however considers the two only varieties of one species

PLATE No 1VII



Gymnogramma Taranica (B1)

© Macmillan Ltd 1968 London

ASPLENIEÆ

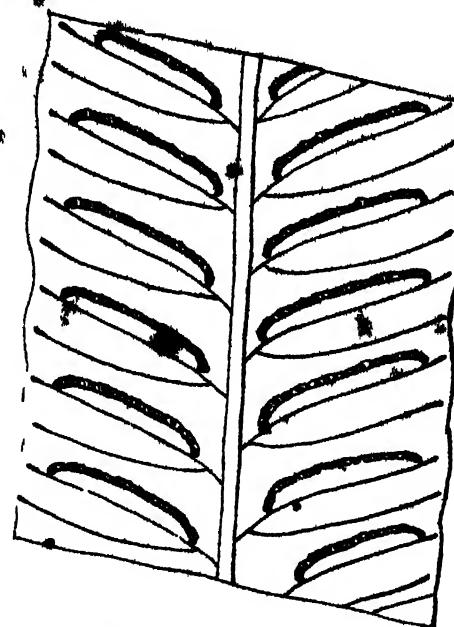
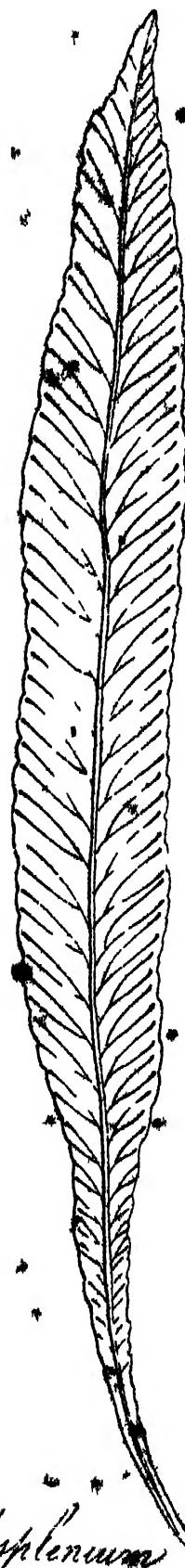
ASPLENIUM (See Ferns of Southern India p 42)

ASPLENIUM GRIFFITHIANUM (Hook) Caudex short thick sub repent fronds capitate a span to nearly a foot high an inch in diameter sub coriaceous pale green with scattered small scales lanceolate shortly acuminate tapering gradually below into short winged stipes the margin rather deeply and coarsely crenato serrate the narrow acumen excepted veins rather distant sub horizontal patent from distant short and rather broad two thirds the length of the vein involucres pale coloured firm membranaceous — Hook Sp Fil in 87 — Hook Jc Plant t 928 (or Cent of Ferns t 28) — Metten Asplen p 89

The specimen figured is from Sikkim below Darjeeling (Dr Thomson)

Hab Assam, Sikkim, Mishmee

PLATE No LVIII



Asplenium

Geffelianum
'root'

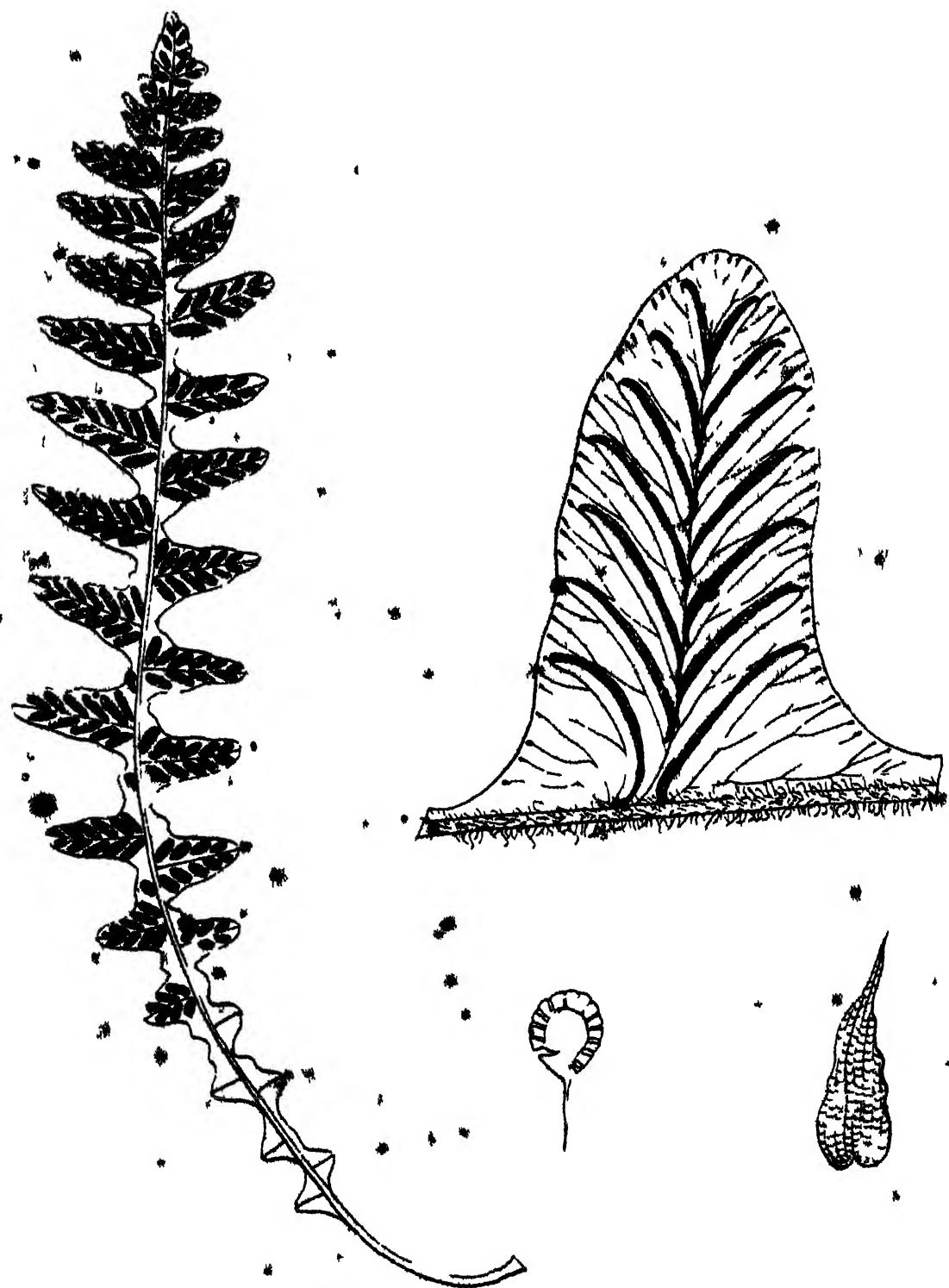
ASPLENIEA

ASPLENIUM ALTERNANS (Wall) Caudex short descending copiously rooting squamose with subulate scales as is the very short (rarely an inch long) stipes and base of the costa beneath fronds ræspitose about a span long chartaceous very opaque pale rusty green beneath glabrous lanceolate scarcely acuminate attenuated below deeply and regularly pinnatifid throughout, lobes ovate or triangular oblong with wide sinuses obtuse quite entire veins sub flabellato dichotomous all free sori copious on all the lobes in two rows linear oblong erecto patent the superior basal one parallel with the costa —*Hook Sp Fil* 111 92 —*Wall Cat* n 221 —*A Dalhousie Hook It Pl t 105 — Metten Asplen p 147*

The specimen figured is from Dalhousie, (Col Dyas)

Hab North West Himalaya 6 000 feet Knmaon Simla Chumbra hill—Abyssum

PLATE No. LIX



Asplenium alternans
(Wall)

*
ASILENIAE

ASPLI NIUM SUTTENTRIONALE (Sw.) Small caudex creeping densely radiculose scarcely paleaceous stipites numerous tufted 3-6 inches high erect flexuous green brown at the base stolon 1-2 inches long conicous glabrous pointed punnet 3/4-1 inch long long pointed linear or linear-lanceolate subunguiculate often very acute or acuminate rarely slightly generally 2-3 alternate entire or finely lateral small subulate rarely bi-lobed (^{or} 3-5 acuminate segments) veins forked parallel scrib very long involucrum also much elongated attached in the margin — *W. k. S. T. d. m. 1.1* — *Sw. in Shal. Jon. n. 1. 253 Willd. Sp. Pl. v. 2. 301* — *Shk. T. d. 1. 2 t. 6* — *Ind. Bot. 1. 1017* — *Monat. Agric. Ind. Hist. Trop. 1. 1. f. 21* — *More. Trop. Vit. Print. 1. 11 c* — *W. t. Asplen. 1. 141* — *Act. J. Gen. Ind. F. e. G. n. T. d. 1. 1. 1. f. 1* — *Americum. Van. — Act. J. Gen. Ind. Sp. T. d. p. 1. 24*

Hab. Northern Ind. & Kashmir (elevation 9000 feet) Garhwal elevation 11000 feet far up from N. in the extreme South Caucasus Ural and Altai New Mexico

•
PLATE No. LX



Asplenium septentrionale
(L.)

ASplenium

ASplenium Ruta MURARIA (L) Small caudex short very fibrous indistinctly paleaceous stipites tufted 2 5 inches long slender green purple below fronds subcoriaceous about as long as the stipes deltoid bi tripinnate pinnules obovate or cuneate (when young simple and reniform) obtuse or truncated entire or cleft or incised at the apex veins fibellate dichotomous sori linear crowded sometimes elongated crowded involucres broad erose at the margin — *Hook Sp Fil* iii 176 — *Linn Sp Pl* p 1,541 — *Sm Engl Bot* i 150 — *Sw Syn Fil* p 85 — *Willd Sp Pl v p 70 t 80 B* — *Moore Fil Brit Nat Print* ii 1 — *Metten Fil Hort Lips* p 143 — *Asp'cn* p 143 — *A murorum*, *Lam* *A murale* *Iernh Aspl multicaule* *I*; *A Matthiolis Gasp et Coss* *Scolopendrium* *Poth* *Amesum*, *Newm* *Tarachia* *P*.

The specimen figured is from Kashmir

Hab. Throughout Europe North Asia, Kashmir, Tibet, &c. Cape Agulhas N Am. 12

PLATE N 131

PLATE EXI



Asplenium Ruta muraria

W. W. W. 1868

ASPLENIUM

ASPLENIUM ADIANTUM NIGRUM (L.) Caudex stout (old ones thickly clothed with the remains of old stipites) horizontal stipites densely tufted castaneous and generally ebeneous at the base often a span and more long frond a span to a foot and more long ovate or ovato oblong acuminate firm membranaceous coriaceous intent bi tripinnate, primary pinnae petiolate ovato acuminate, secondary also petiolate tertiary usually sessile from a cuneate base ovate or oblong or lanceolate or even linear more or less acuminate but obtuse inciso pinnatifid lobes coarsely and sub spinuloso serrate veins pinnated erecto patent sori copious approximate linear oblong at length confluent involucres firm membranaceous pale brown entire rachises alate — *Hook Sp Fil* in 187 — *Linn Sp Pl* p 1541 — *Sw Syn Fil* p 84 — *Willd Sp Pl* v p 346 — *Schk Fil* p 74 t 80 A — *Engl Bot* t 1950 — *Metten Asplen* p 144 — *Moore Ferns Nat Print* t 36 — *Moore Ind Fil* p 109 — A *Oreopteris* L (according to Moore, but Mettenius refers this to the var *acutum*) A *argutum* *Klfs En Fil* p 176 — A *humile* *Bl En Fil Jav* p 185 — A *Silesiacum* *Milde*, — A *nigrum*, *Bernh* — A *luridum* *Salesb* — A *capense*, L (sde Moore) *Tarachia* Pr — Var β *acutum* Pollin pinnae pinnules and segments narrower often linear acute or acuminate *Moore Brit Ferns Nat Print* t 37 — A. *acutum* *Bory* in *Willd Sp Pl* v p 347 — A *productum* *Lowe Trans Camb Phil Soc* vi p 524 — Var γ *obtusum* Moore, pinnules and lobes very broad more acutely dentate — A *Ad. nigr* v *Capense*, *Schlecht Adumb*, *Fil Cap* p 31 t 18 — A *obtusum* *Aut Willd Sp Pl* v p 341, — A *cuneifolium*, *Vis Fil Ital Fragm* p 16 t 18 — A *Serpentini* *Tausch and Henst Aspl Europ* p 81 t 1 2 — Mr Moore refers hither A *fissum* *Weinm* — A *forsteri* and A *novum* *Sadl* — A *incisum*, *Opi* — A *multicaule* *Scholtz* and A *tabulare* *Schad*

The specimen figured is from Simla

Hab All three varieties are found throughout Europe and Northern Asia N and S Africa Madeira the Canaries Azores, Cape de Verd Islands St Helena Abyssinia, Java In Northern India they are found in Afghanistan and at Mussoorie, Kashmir, and Simla

PLATE No LXII



Asplenium Adiantum-nigrum
(L.)

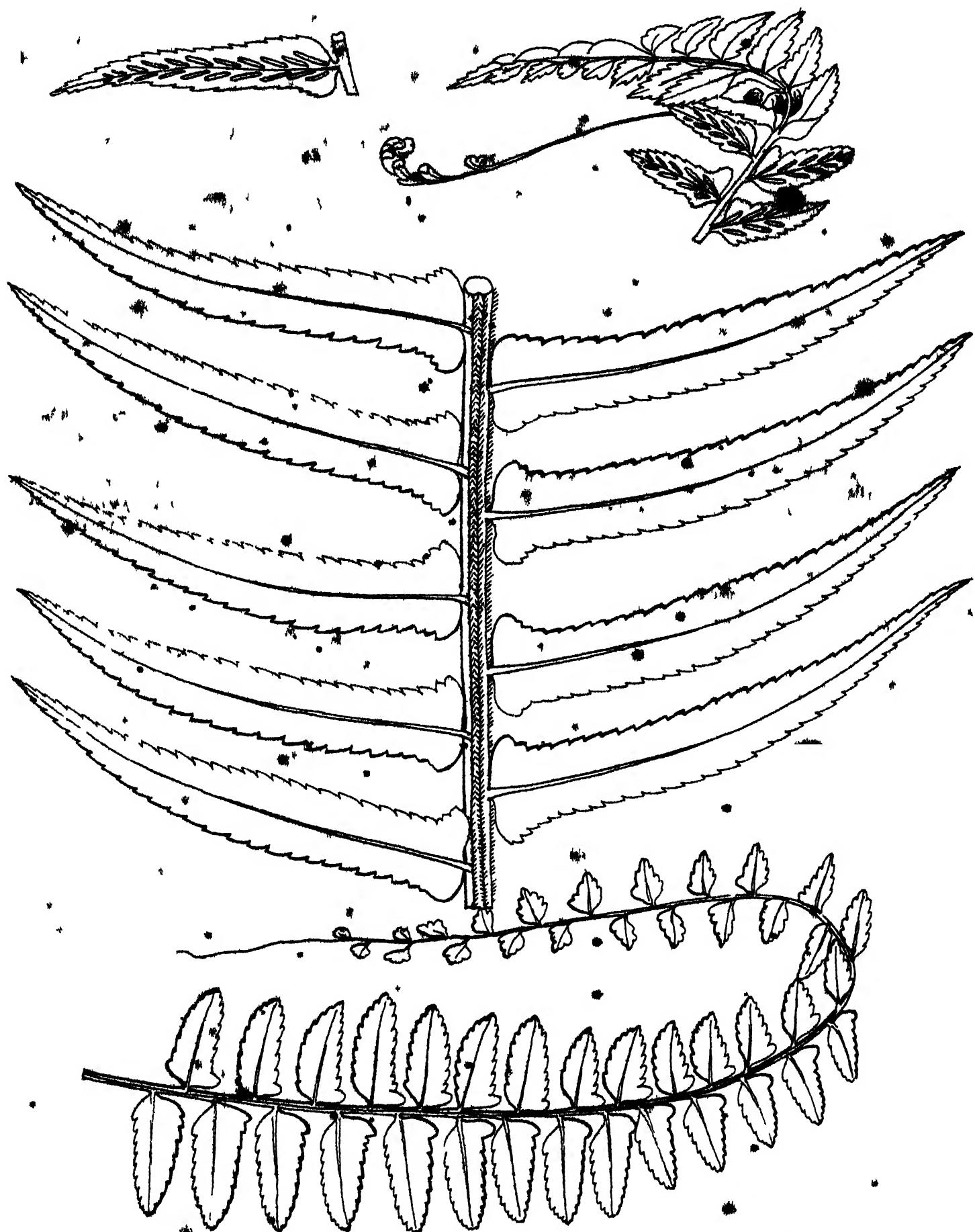
ASPLENIUM

ASPLENIUM LONGISSIMUM (Bl.) Caudex stout woody paleaceous with rather long brown lanceolate subulate scales, stipites and rachis dark lurid black deciduously villosa paleaceous, fronds very variable in length 1 3 and more feet elongate oblong lanceolate subcoriaceous opaque dark brown (when dry) the extremity running out apparently with a continuous growth to a long narrow acumen rooting and bearing young plants at the apex pinnated pinnae 3 4 inches long very numerous horizontal sessile moderately distant from a broad ($\frac{1}{2}$ $\frac{3}{4}$ inch) cuneated base lanceolate gradually and much acuminate more or less strongly serrated especially above the middle, superior base with a triangular auricle inferior base often also auricled or with an angle, inferior pinnae gradually smaller and very obtuse, veins erecto patent once or twice forked sori copious close placed regular nearer the costa than the margin involucro subcoriaceous rigid narrow brown — *Hook Sp Fil* in 148 — *Bl En Fil Jav* p 178 — *Metten Asplen* p 147 — *Aspl flagelliferum*, *Wall Cat* n 219 (where, for Sylhet read Singapore) *Aspl sordidum* *Aze Bot Zeit* vi p 171 (sic! *M tien*)

The figure is taken from Sir W Hooker's ' Species Filicum'

Hab Mergui, Burmah, Singapore Malacca Java Mauritius and Diego Garcia

PLATE No LXXXI



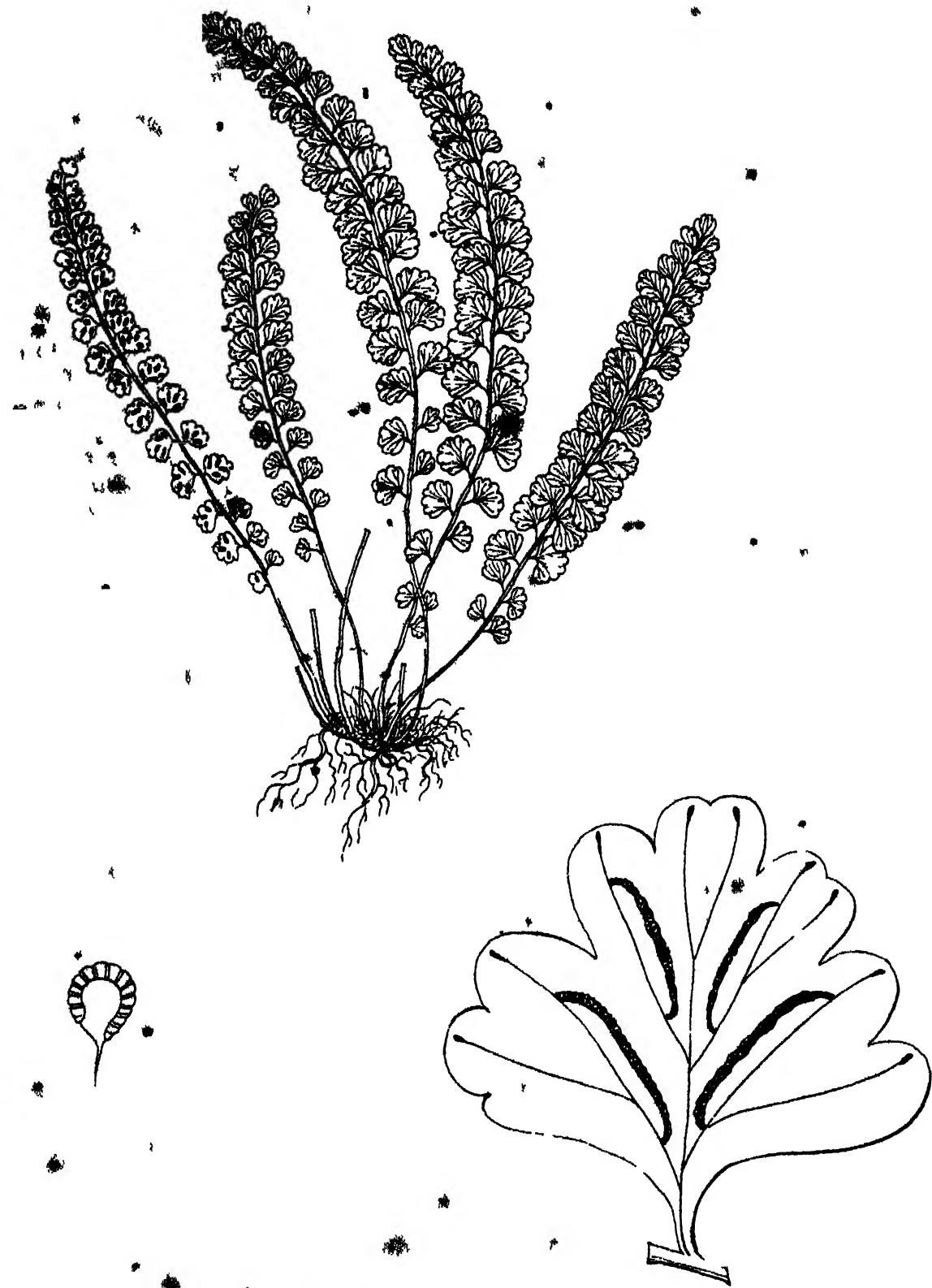
Asplenium longissimum
(Blume)

ASPLENIUM

A. SPLENIUM VIRIDE (Huds.) Candices short creeping clothed with black subulate scales forming a closely compacted rooting mass stipites densely coespitose 2-4 inches long slender glossy black below then castaneous nearer the fronds stramineous fronds 3-6 rarely 6 inches long linear lanceolate membranaceous bright green (as is the slender rachis) glabrous scarcely acuminate pinnated pinnæ 2-3 lines long rather distant pinnate all petiolate rhombic ovate obtuse more or less obliquely cuneate at the base deeply but rather irregularly crenate Scarcely at all lobed veins sub flabellate sori 2-4 near the disc remote from the margin oblong oblique at length confluent involucres very thin membranaceous soon obliterated — *Hook Sp Fl* m 144 — *Huds Fl Ang* p 453 — *Sw Syn Fl* p 80 — *Willd Sp Pl v* p 332 — *Schl Fl* p 68 t 73 — *Eng Bot t* 392 — *Moore and Lindl Ferns, Nat Print t* 40 — *Metten Asplen p* 139 — **A. Trichomanes** var *ramosum* *Linn Sp II* p 1541, — **A. intermedium**, *P. Del Prag* 1 233 — *Tent Pterid t* 3 f 22, — **A. umbrosum**, *Vill*

Hab Throughout Europe, Himalayas, Kumaon (alt 12 000 feet), N America

PLATE No LXIV



Asplenium nudum
(Nude)

ASPLENIUM

ASPLENIUM BULBIFERUM (Forst) Caudex stout horizontal or oblique paleaceous with long linear subulate scales at the summit stipites lurid green 4 inches to a foot long sometimes deciduous and sparsely paleaceous semiterete or broad and compressed fronds sub coriaceous membranaceous yet flaccid 1 3 feet long ovato lanceolate erect or pendulous dark green pinnato pinnatifid with lobes entire or toothed or usually but rarely tripinnate primary pinnae often proliferous 6 inches long petiolate more or less lanceolate acuminate pinnules in the normal form from half an inch to 2 inches long elliptical ovate and more or less pinnatifid with ewappleoid sori or the pinnules are narrower elongated deeply divided and the majority of them quite bareoid sori oblique involucres firm greenish rachises compressed — Hook Sp Fil n 196 — Forst Prodr p 80 — Sw Syn Fil 1 p 83 and 218 — Schk Fil t 79 Hook 1c Fil t 423 — Hombr et Jacq Voy Pol Sud Pot t 3 f 1 — Hook fil Fl V Zeal n p 34 — Fl Tasm n p 146 — Metten Asplen p 106 — Moore Ind Fil p 118 — Ctenopteris Den — Aspl viridans Labill Sert fust Cal d 1 p 2 t 9 — Metten Asplen p 107 — A bullatum Wall Cat n 215 — Athyrium macrocarpum Kee Cen Fil p 188 — Asplen Moo

The specimen figured is from Sikkim (Dr Thomson) the plate has been named A bullatum (Will) and should be referred to A bulbiferum Forst as that is an older name

Hab New Zealand Australia Nepal Sikkim Bhutan Tenasserim South America

PLATE No J V



Asplenium bullatum
(Wall)

ASPLENIEÆ

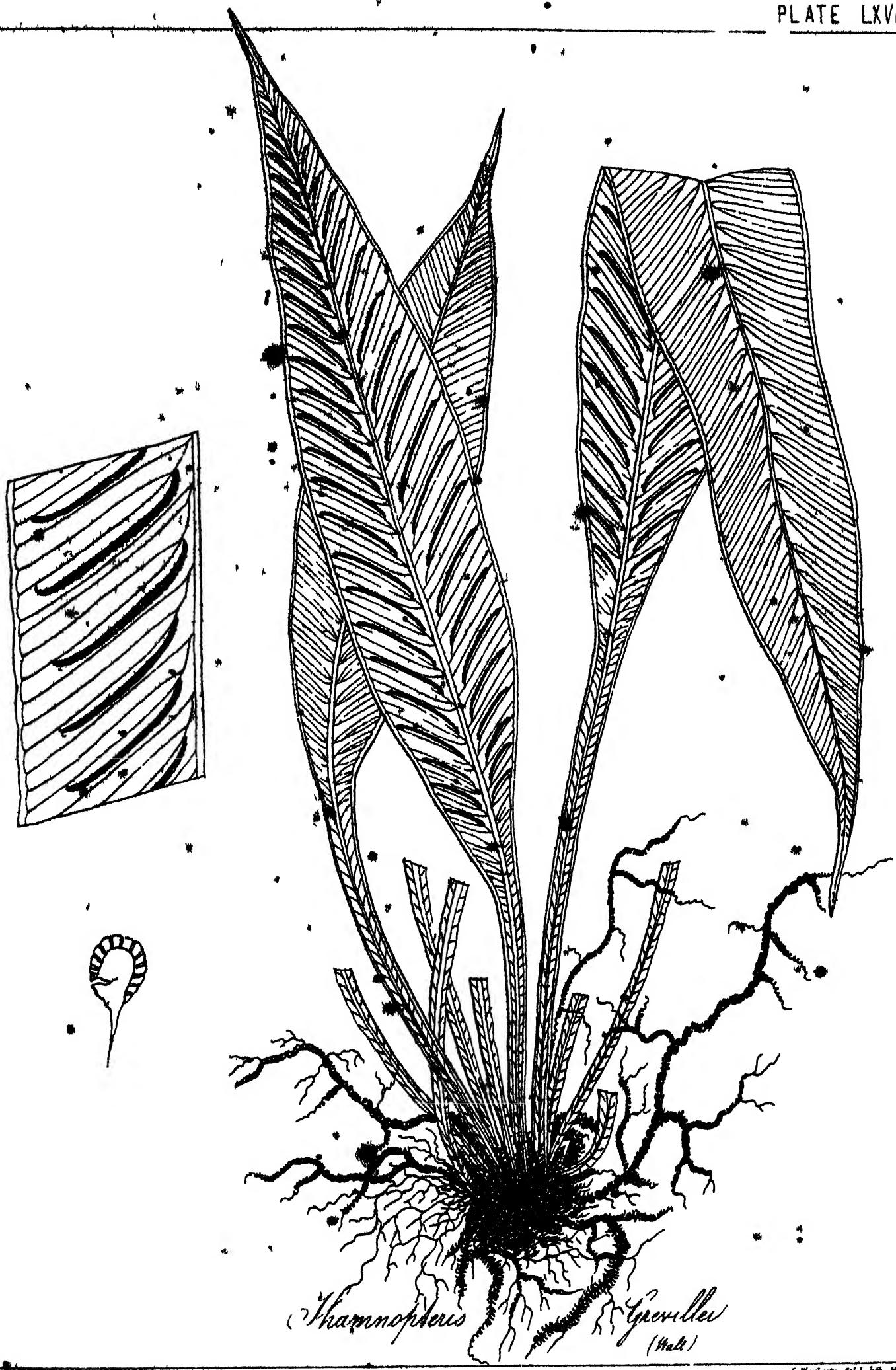
THAMNOPTFRIS (See Ferns of Southern India p 42)

THAMNOPTERIS GREVILLEI (Wall) Fronds tufted subcoriaceous $1\frac{1}{2}$ foot long pale whitish green when dry spathulate (i.e. long ovate finely acuminate suddenly contracted at the base and decurrent upon a long winged stipe) veins compact horizontally 1 stent sori linear very narrow occupying the upper half or the entire broad portion of the frond rather distant — *Hook Sp Fil* in 80 — *Wall Cat* n 1,036 — *Hook et Grev Ic Fil* t 128 — *Moore, Ind Fil* p 50

The specimen figured is from Birmah, (Captain the Honorable J. Dormer)

Hab Birmah, Savoy, Mishmec

PLATE No LXVI



Thamnopeltis Gracilis
(Wall.)

ASPIRIF

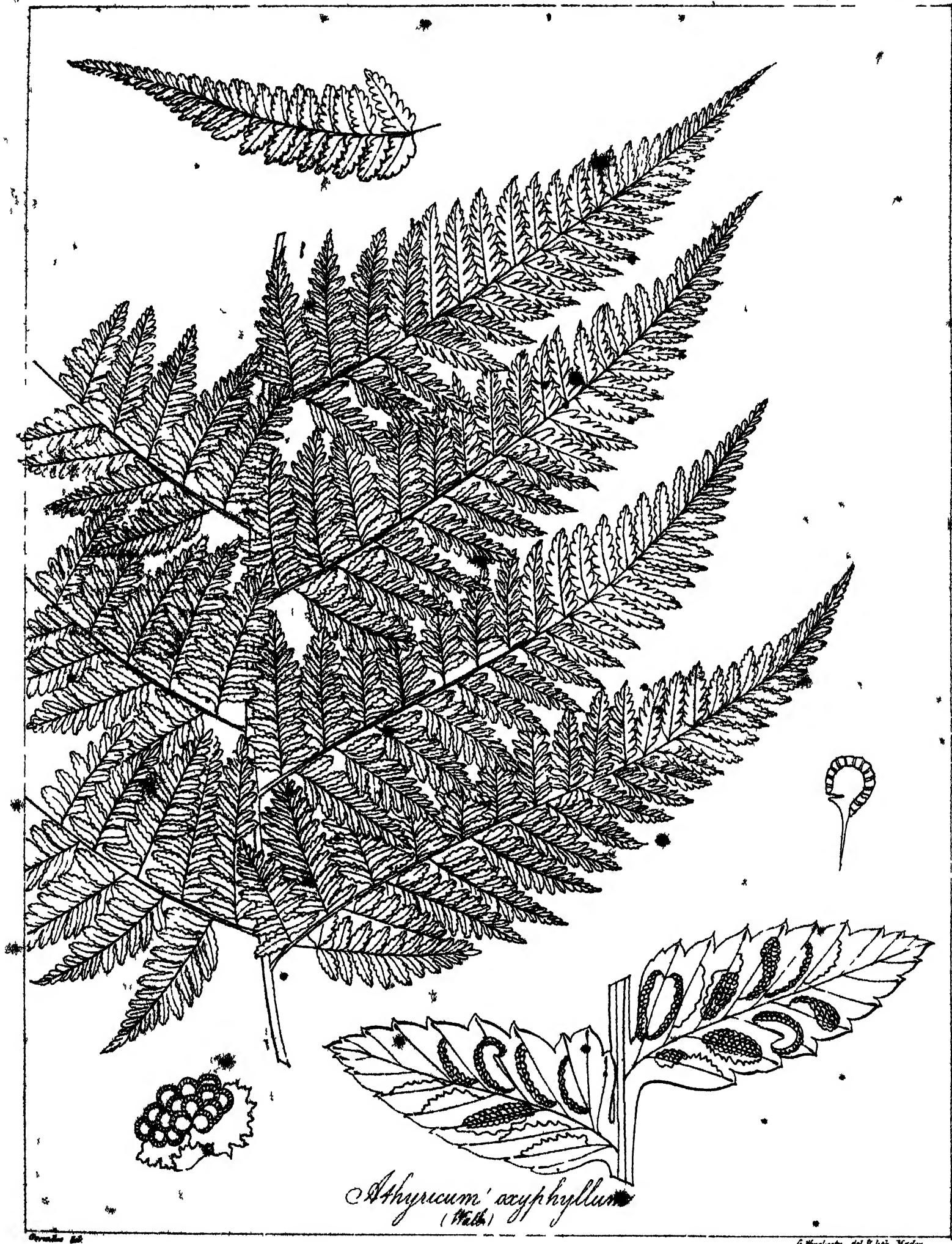
ATHYRIUM (See Ferns of Southern India p 50)

ATHYRIUM OXYPHYLIUM (Hook) Caudex very stout 1 2 inches in diameter ascending clothed with numerous persistent stipites of former years villous rather than paleaceous at the summit with very long (3 of an inch) erect subflexuous ferruginous scales stipites clustered 4 inches to 1 foot long stramineous glossy below shaggy with the same scales as crown the caudex fronds 6 18 inches long from broad lanceolate to sub deltoid ovate subcoriaceous generally much acuminate but rarely tripinnate, primary pinnae 8 inches in length often flexuous from a broad base lanceolate sometimes spinulose on the costa above generally much acuminate and sharply serrated only at the apex pinnules from an oblique cuneate base tapering into a distinct petiolule ovato-lanceolate acute lobato pinnatifid at the margin auricled at the superior base sinuate towards the apex the lobes usually acute sometimes the pinnules are again pinnated veins pinnated sori in two rows one on each veinlet near the middle varying much in size rarely straight mostly curved or crescent shaped involucres often hippocrepiform brown membranaceous erose or fringed at the margin sometimes deciduous — Hook Sp Fil m 221 — Polypodium oxyphyllum Wall Cat p 324 — Athyrium Moore Ind Fil p 196 — Aspidium ciburnicum Wall Cat p 389 — (pinnae and pinnules more slender) Asplenium J Sm Cat Cult Ferns p 6 — Metten Asplen p 194 — Lastrea J Sm Cat Cult Ferns p 4 — Aspidium squarrosum Wall Cat n 356 — (Moore refers this to his *Athyrium foliolosum*) — Polypodium dicranopterum Kze in Linnae i xxiii p 318 — Aspidium Braun Ind Sem Berol 1806 — Metten Fil Hort Lips p 93 t 19 f 1 4

The specimen figured is from the Khasya Hills (Dr Thomson)

Hub Nepal Assam Khasya Eastern Himalaya Bhotan

ILL No LVI



Athyrium acypphyllum
(Mitt.)

ASPLENIEÆ

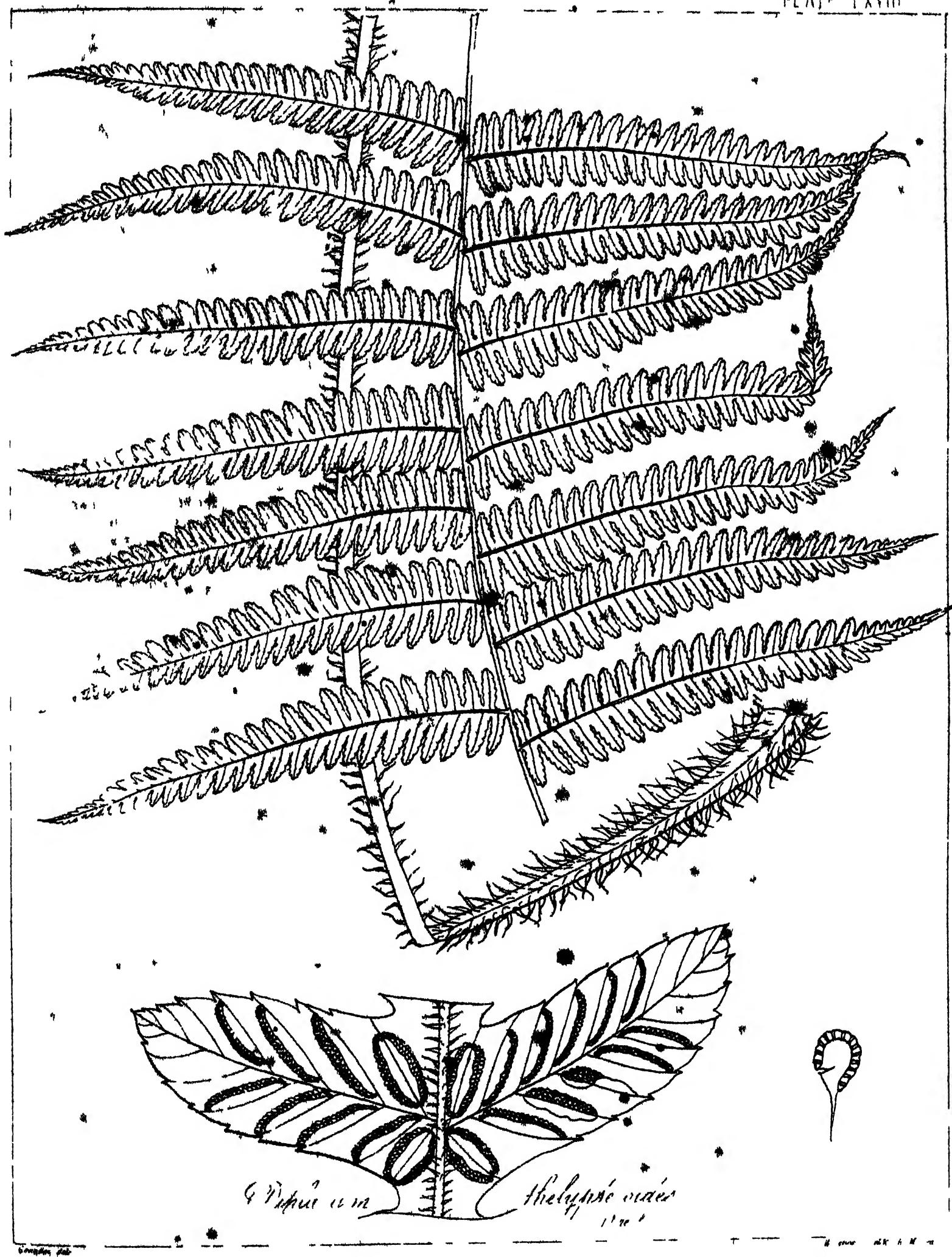
DIPLAZIUM (See *Ferns of Southern India* p 53)

DIPLOAZIUM THELIPTEROIDES (Mich.) Caudex stout creeping stipites rather distant on the caudex a foot or more long stramineous glossy brown below fronds 1 3 feet long submembranaceous dark green lanceolate acuminate firm pinnate pinnae subremote horizontal 3 4 inches long sessile from a broad base linear oblong acuminate deeply almost to the rachis pinnatifid, segments oblong elliptical $\frac{1}{2}$ of an inch long horizontal entire or obscurely serrated very obtuse veins mostly simple pinnated, sori linear oblong in two series approximate upon the segments soon confluent involucres convex pale firm membranaceous entire convex at the margin lower ones generally double rachis stramineous—*Hook Sp Fil* in 229—*Mich Fl Bor Am* in p 265—*Willd Sp Pl* v p 336—*Schlecht Fil* p 71 t 76 b—*Isa Gray Man B N U S* p 627—*Metten Fil Hort Lips* p 78—*Asplen* p 184,—*Athyrium, Desv Moore*,—*Diplazium P*—*Aspl. acrostichoides, Sw Syn Fil* p 275

The specimen figured is from Sikkim—Himalaya (Dr Thomson)

Hab Northern India above Simla, Sikkim—Himalaya, Chinese Tartary, River Amur, North America, Canada to the middle of United States

PLATE No LXVIII



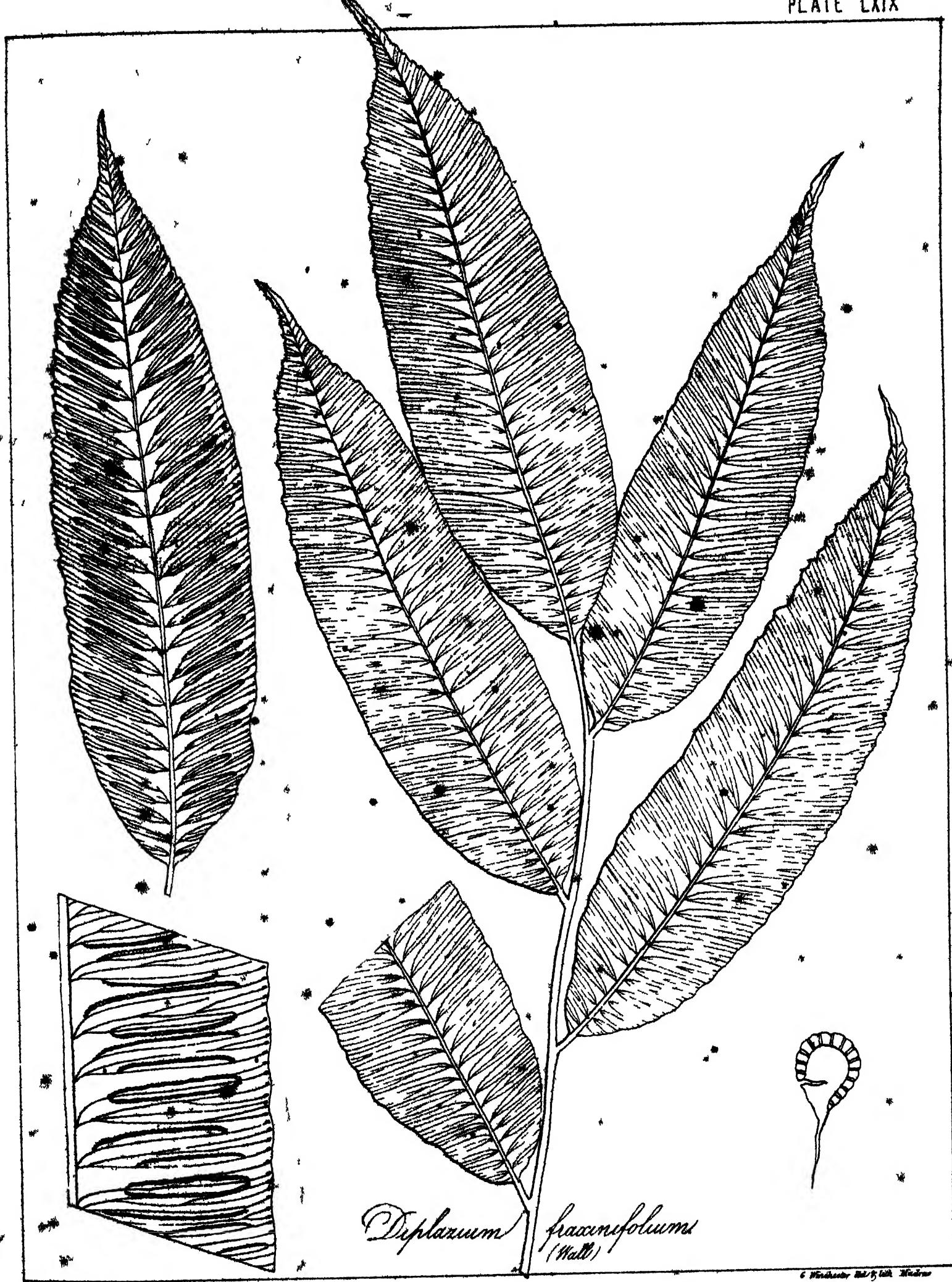
DIPLAZIUM

DIPLAZIUM FRAXINIFOLIUM (Wall) Caudex ascending copiously fibrous nigro paleaceous at the apex stipites aggregated often a foot long brown subrobust below chiefly laxly and deciduously nigrescent paleaceous fronds 1 1½ foot long subcoriaceous firm subnitent brown when dry pinnate pinnæ 3 11 remote petioled patent 6 10 inches long broadly oblong lanceolate finely acuminate entirely or very obscurely serrate towards the apex subobliquely cuneate at the base veins fasciculate twice or thrice dichotomous parallel copious all free (rarely here and there anastomosing) sori copious linear elongate extending from the costa nearly to the margin involucres narrow—*Hook Sp Fil* ill. 240—*Wall Cat* n 194—*Hook 2nd Cent of Ferns* t 19—*Diplazium Wall Herb* 1823—*Moore Ind Fil* p 133—*Diplazium elegans (veins free)* *Hook in Kew Gard Misc* ix p 343—*C Wright in Ringgold and Rogers's Herb of U S expl exp*—*D falcatum Don* ?—*Aspl Donianum Metten Asplen* p 178

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Penang, Singapore, Khasya and Assam Hongkong

PLATE No LXIX



Diplazium *fraxinifolium*
(Wall)

ASPIENIEAE

CALLIPIERIS (See Ferns of Southern India p 54)

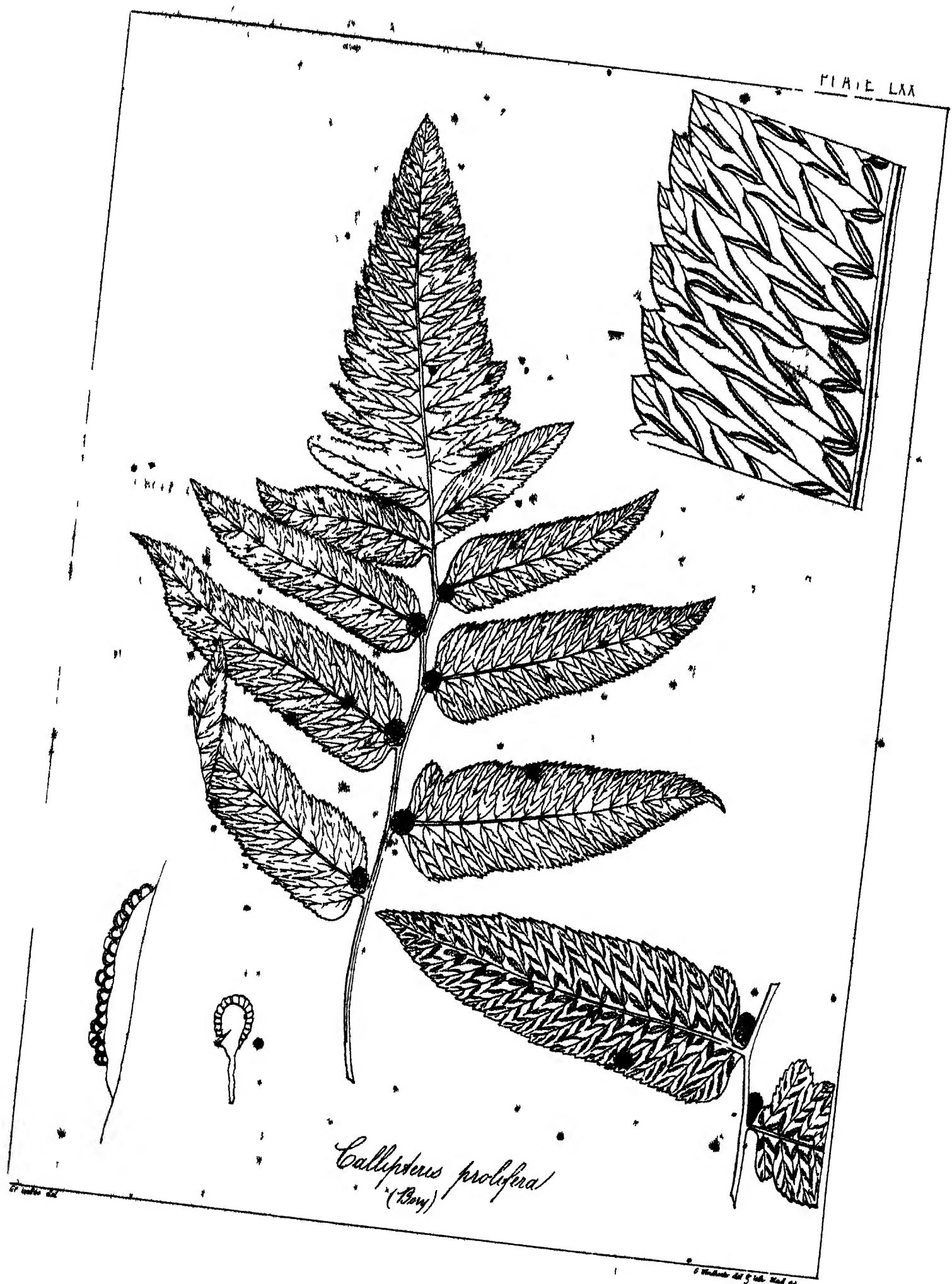
CALLIPTERIS PROLIFERA (Bory) Caudex erect scaly stipes stout 1 2 feet long deciduously scaly smooth or muricated fronds 2 1 feet long broad oblong acuminate subcoriaceous pinnated often with scaly proliferous axillary bulbs pinnae numerous large horizontally patent sessile 6 10 inches and more long often 2 inches broad sessile from a broad truncated and subcordate and on each side subauricled base oblong gradually narrower to the acute or acuminate apex the margin entire or serrated or irregularly sinuate lobate rarely below agnate pinnate with oval oblong acute pinnae terminal pinnae large hastato triangular broad at the base and pinnatifid with long segments entire or serrated at the acuminate apex veins copious fasciculato pinnate branches or veinlets uniting and anastomosing more or less copiously forming triangular areoles next the costae the rest more or less elongated, sori upon all the veins and anastomosing with them involucellate narrow mostly diploboid — *A* decussatum Hook Sp Fil iii 270 — *Sw* Syn Fil p 76 and 260 — *Willd* Sp II v p 173 — *Metten Asplen* p 173 — *Amisogonium* P. Tent Pterid p 116 t 4 f 13 — *Hook Gen Fil* p 56 — (Tab A f 11) *Aspl. proliferum* Linn Willd Cat p 236 — *Metten Fil Hook Lips* p 74 t 11 f 7 — *Diplazium Petit* — *Th. Kaulf* En Fil p 182 — *Sieb Sjz Fil* p 30 — *D. bulbiferum* Bory in Herb Hook — *D. horridum* K. Annal p 26, — *D. Swartzii*, *Bl. En Fil Ja* p 191 — *D. r. pandum* B' Ln p 191 and in Herb Hook *Aspl. spinulosum*, *Bl. En Fil* p 193 and in Herb Hook *Aspl. spinulosum* B' Fil p 193 et in Herb Hook *Callipteris J Sm* *Asplenium Metten Asplen* p 172 — *Diplazium accedens* Bl Fil p 192 — *Asplenium Schlebn R Dansk Vidensk Afshandl* iv p 232, — *Digrammaria robusta*, *Fee Gen* p 218 t 18 B

The specimen figured is from Assam

Hab Mauritius Jawa Isle of Leyte Ternate Moluccas, Borneo Assam Solomon's Group, S Pacific, Feejee Islands, New Ireland, Tobe Island W Tropical Africa Fernando Po

PLATE No LXX

PIATE LXX



ASPLENIEAE

Veins reticulated with marginal veinlets free

CETERACH (Willdenow Sp Pl v 136)

(Ceterach *Adanson* *Notolepium* *Newman* *Acrostichum* Sp *Cavanilles* *Asplenium* Sp *Auct* *Grammitidis* Sp, *Auct* *Gymnopteridis* Sp *Bernhardii* *Scolopendrum* Sp *Symons* *Vittaria* Sp *Bernhardii* *Gymnogrammatis* Sp *Sprengel* Sp *Blechni* Sp *luct*)

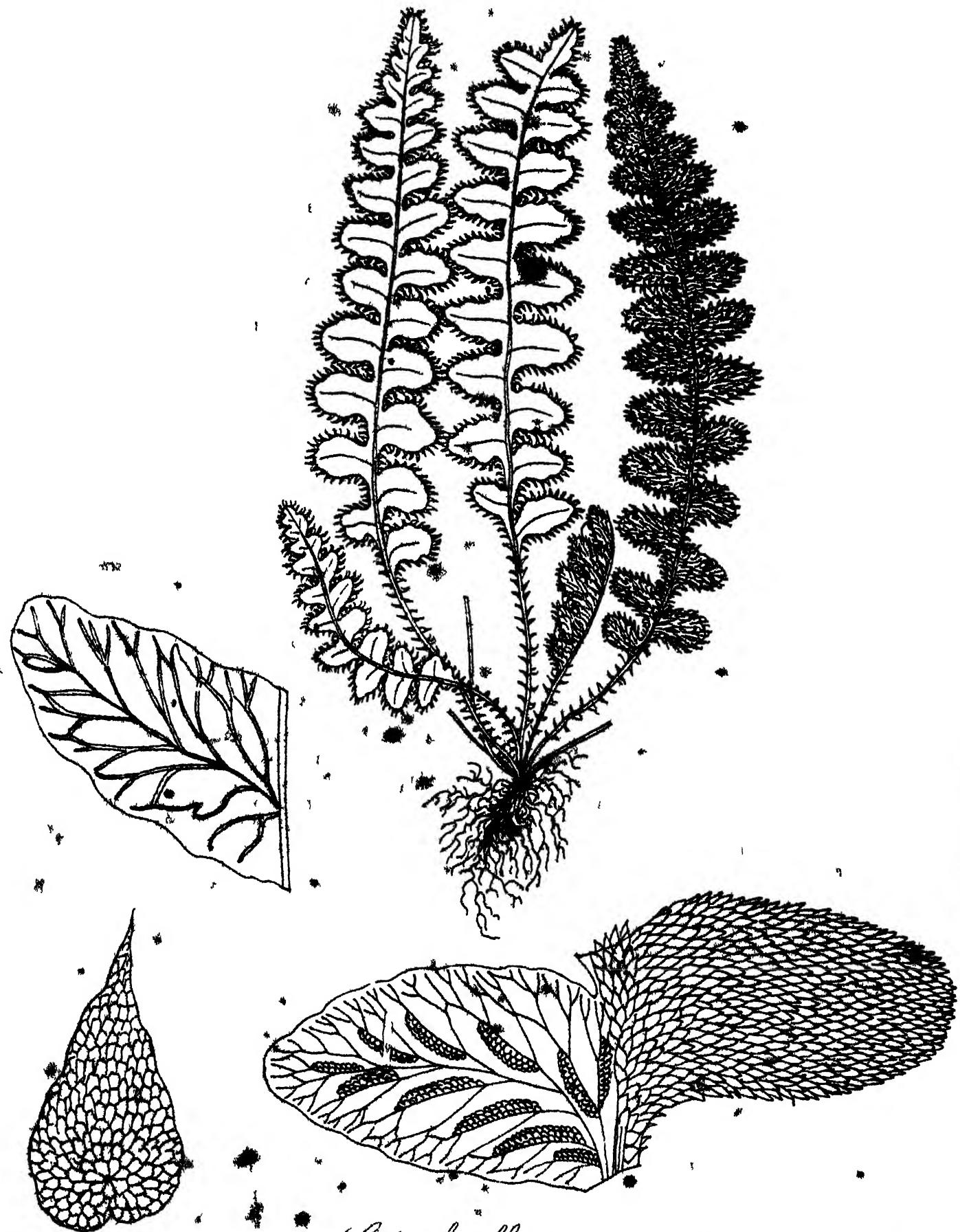
Sori linear oblong obsoletely indusiate the receptacles lateral usually anterior to the segment, (posterior in the basal sori) *Indusium* linear narrow plane sometimes obsolete (*Hook*) thin narrow (*Lee*) *Veins* obscure forked from a central costa parallel and soriferous below anastomosing irregularly near the margin the basal anterior *venule* (to the anterior in reference to the frond) soriferous on its anterior side

Fronds pinnatifid coriaceous densely clothed beneath with membranous imbricated scales Rhizome short erect This genus is anomalous Its affinity is with the *Asplenium* on account of its lateral sori but the sori in the common species seem to be without covers — (Moore)

CETERACH OFFICINARUM (Willd) Caudex short thick densely rooting fronds 6-10 inches long caespitose lanceolate tapering below into a scaly slender stipes coriaceous opaque deeply pinnatifid subpinnate at the base green above and naked beneath densely clothed with imbricated tawny entire or toothed scales segments broad ovate or oblong horizontal obtuse lower ones or pinnæ much abbreviated, veins anastomosing copiously towards the margin sori short oblong involucrate very narrow often obsolete *Asplenium Ceterach* — *Hook Sp Fil* in 273 — *Linn Sp 11 p 1538* — *Grammitis Ceterach* *Sw* *Syn Fil p 23* — *Ceterach officinarum* *Willd Sp Pl v p 136* — *Webb Fil Canar* in 7 413 — *Hook Cen Fil t 113 A and Brit Flora ed 7 t 9 f 1* — *Mett Hort Fil 11 p 80* — *Pappe and Haas Syn Fil Afr Inst p 23* — *Scolopendrum Ceterach* *Sm Engl Bot t 1241* *Gymnogramme Ceterach* *Sp*

Hab Throughout Europe Asia Siberia Asia Minor Northern Africa North West India Persia Tibet Afghanistan Kashmir, Azores Canary Islands Brazil

PLATE No LXXI



Ceterach officinarum
(Willd.)

ASPLENIEA

HEMIDICTION (Presl Tent Pterid 110)

(Asplenidium L. Smith Asplenii Sp. Auct. Tarachia Sp., Presl Diplazia Sp. Hort.)

Frond indusiate linear elongate parallel oblique, the receptacles lateral anterior Indusium narrow membranaceous plane veins simple or forked from a central costa venules parallel at the base reticulated towards the margin forming trapezoid or elongated scales the apices arcuately combined or connected by a continuous straight marginal veinlet

Fronds coriaceous or thin herbaceous pinnate sometimes large Rhizome thick erect —(Moore)

HEMIDICTION FINDLAYSONIANUM (Wall) Caudex erect stout woody scaly at the summit rooting below stipites and rachis compressed deciduously scaly below fronds 1 1½ foot long coriaceous (brownish green when dry) oblong pinnate pinnae remote 5-16 or 17 erecto patent inequilaterally and subfalcately ovato lanceolate long acuminate entire or sinuato subangulate subauriculate unequally cuneato at the base and gradually attenuated into the petiole scarcely costate terminal one subtriangularoid unequally 3 lobed, veins subfibrillate diverging from an indistinct costa dichotomous free below anastomosing towards the margin into very elongated subhexagonal areoles terminal veinlets free or rarely combined in arches at the margin sori linear elongated but varying much in length originating at the centro but never extending to the margin involucres narrow —Hook Sp Fil m 271 —Wall Cat n 191 —Hook Ic Plant t 937, (veinlets too copiously arched at the margin) —A integerrimum Wall Ms —Hook et Grev Ic Fil t 136 (inaccurate in the venation) —Hemidictyon Finlaysonianum Moore Ind Fil p 1 —H Hookerianum, Moore Ind Fil p 130, who quotes A Hookerianum Wall Cat n 2,682)

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Ienang, Mishmee, Sikkim Khasya, Assam Nepaul, Kumaon

PLATE No LXXII



Hemidycyon Lindleyanum
(Wall.)

POLYPODIEÆ

Virgins of the frond, i volute indusoid (i e the sori spuriously indusoid)

ALLOSORUS Bernhardii Schrad *neues Journ Bot* 1 pt 2 5 36 t 2 f 6

(*Allosorus* *Auct* *Phyllobus* *Desvaux* *Homopteris* *Ruprecht* *Pteridis* *S* *Auct* *Cryptogrammatis* *Sp* *Auct* *Struthiopteris* *Sp* *Auct* *Steganis* *Sp* *Auct* *Onoclea* *Sp* *lnt* *Osmundæ* *Sp* *Auct* *Blechnum* *Sp* *Auct* *Acrostichi* *Sp*, *Auct* *Chelanthis* *Sp*, *Auct* *Onychia* *Sp* *Lee*)

Sori spuriously indusiate, rotundate covered by the revolute subherbaceous margin of the pinnules at length confluent into a transverse line (parallel to the margin) often becoming diffuse the receptacles punctiform *Veins* in the fertile fronds simple or forked, from a central costa, in the more divided sterile fronds simple or forked in the ultimate segments *venules* free

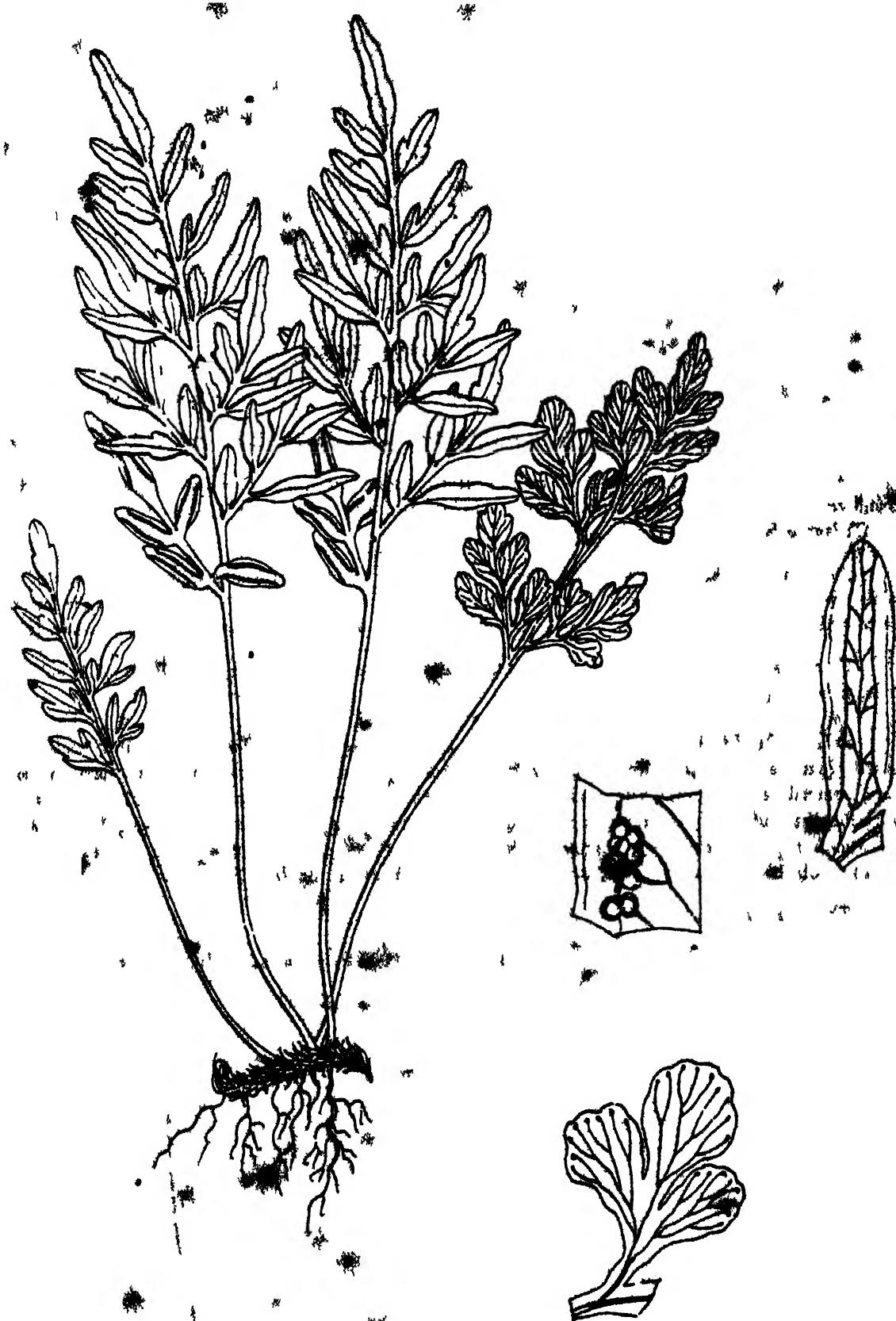
Fronds dimorphous dwarf herbaceous bi tripinnate the fertile contracted, i e with revolute siliculiform pinnules. Rhizome short decumbent —(Moore)

ALLOSORUS STELLERI (Rupr) Cudex 4 6 inches high very slender filiform slightly scaly fronds thin membranaceous pale green bipinnate sterile pinnules obovate or subrhomboidal sinuato lobate fertile ones lanceolate obtuse crenate all more or less petiolate, terminal ones elongated veins remote simple or forked, sori subrotund involucres broad continuous very thin membranaceous whitish subconvex but close pressed stipes very slender dark brown glossy superior rachises winged —*Pellaea gracilis* Hook *Sp* *Fil* n 188,—*Allosorus gracilis* Ir Gray *Man of the Bot of North U S* p 264 ed 2 p 591 t 9 —*Pteris gracilis*, Mich *Fil* n p 262 (not Fé) —*Chelonegracilis* Kaulf *Linnae Fil* p 209 —*Allosorus Stelleri* Rupr *Dist Crypt Ross* 17 —*Ledel* *Fil* *Ross* iv 526

The figure is taken from Sir W Hooker's Species Filicum

* Hab N America, Canada N India Kumaon (alt. 10000 feet) Champwa N W Thibet

PLATE No LXXXIII



Allasorus Hellew
(Rupe)

POLYPODIEÆ

POLYPODIUM (See Ferns of Southern India p 55)

POLYPODIUM DRYOPTERIS (L) Caudex long creeping branched more or less scaly stipes a span to a foot or more long or slender stramineous scaly below fronds thin membranaceous 5 6 inches and more long pentangular deltoid tripartito bipinnate primary divisions long petioled (especially the terminal one) deltoid secondary pinnae mostly sessile 1½ 2 inches long oblong or ovato oblong rather obtuse deeply pinnatifid sometimes again pinnate at their base segments oval entire or the inferior ones pinnatifido serrate veins forked sori dorsal on the upper veinlet nearer the margin than the costule—*Hook Sp Fl* iv 250—*Linn Sp Pl* p 155—*Engl Bot* t 616—*Su Syn Fl* p 42—*Schl Fl* t 25—*Willd Sp Pl* v p 209—*Hook et Arn Br Fl* ed 8 p 580—*Ledeb Fl Alt a genninum hisp (P Robertianum)*—*Hook Brt Ferns* 4—*Phegopteris Fl*—*Metten Phegopt p 9*,—*Polypodium ciliareum Ph N 1m Fl* ii p 639

Hab Throughout Europe N India Western Himalaya Siberia Japan Greenland, Northern United States

PLATE No LXXIV



Polypodium *Dryopteris*
(L.)

POLYPODIEÆ

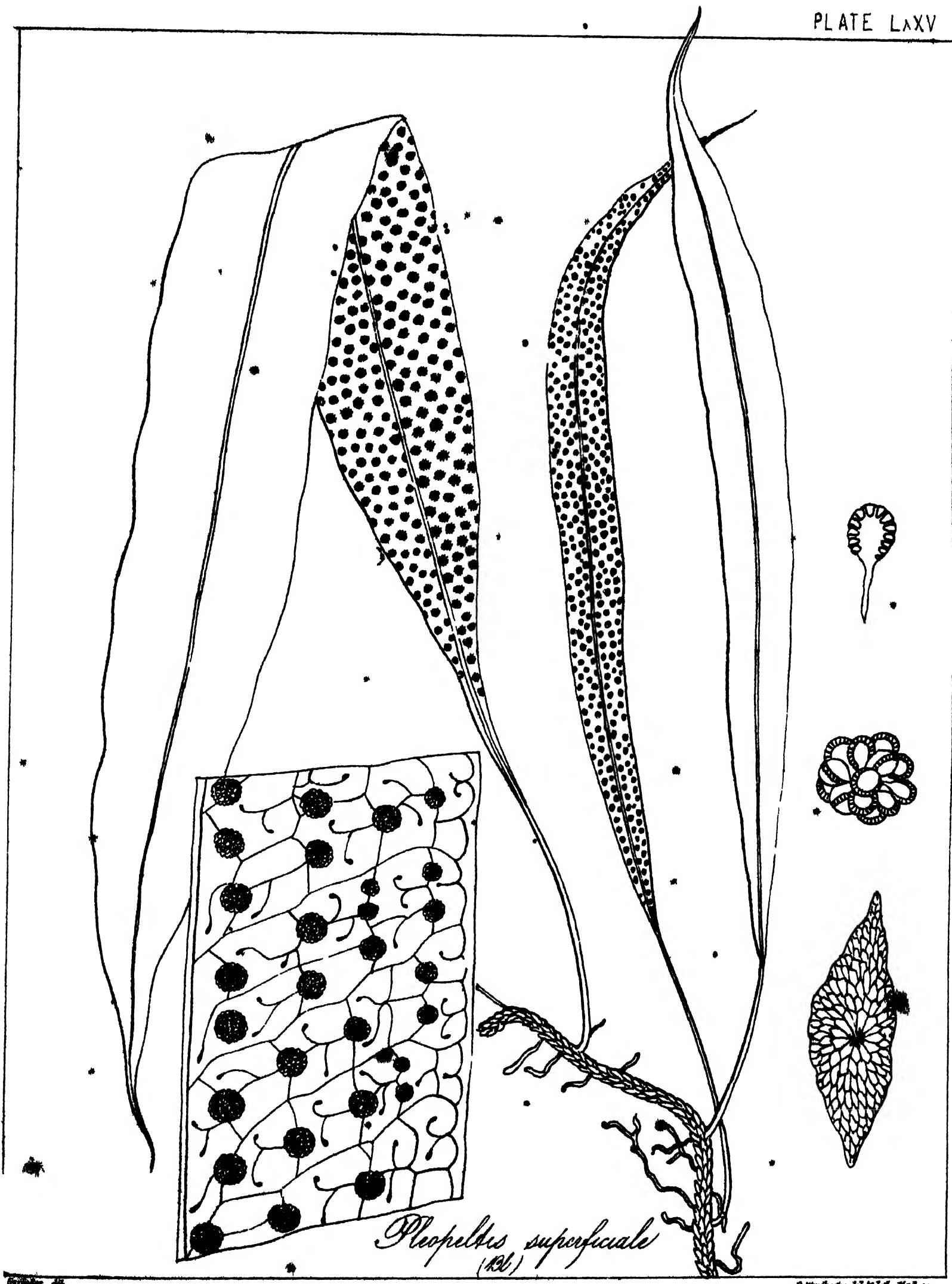
PILOFELTIS (See Ferns of Southern India p 57)

PILOFELTIS ST. PERFICATIS (Bl.) Caudex very long creeping or scandent branched tortuous sparingly paleaceous with subciliate short lanceolate scales stipites more or less distant 2-6 inches long often curved upwards fronds 6-12 inches long 1-2 inches broad straight or subulate firm membranaceous generally very opaque lanceolate or oblong-lanceolate entire glabrous finely acuminate below gradually attenuated and decurrent upon the stipes no distinct costules primary veins obliquely patent flexuous slender united by transverse veins so as to form about four rows of large subquadrate areoles these are again divided into irregular lesser ones which include free simple or branched veinlets and small arranged in two irregular series between the primary veins — *Hook Sp Fil v 71 Bl Ital Ital 136 t 56 / 1 - 1 hymenodes Wall Cat n 283 (not of K e according to Metten Ital Hort Ital p 37 t 20 t 40 41 See Ital 11)*

The specimen figured is from the Khasya Hills (Calcutta Herbarium)

Hab Jiai Chupidong mountains Fennaserum Khasya Bh tan (alt 3000 6000 feet) Hongkong

PLATE No LXXV



Pleopeltis superficialis
(Reinhardt)

POLYPODIEAE

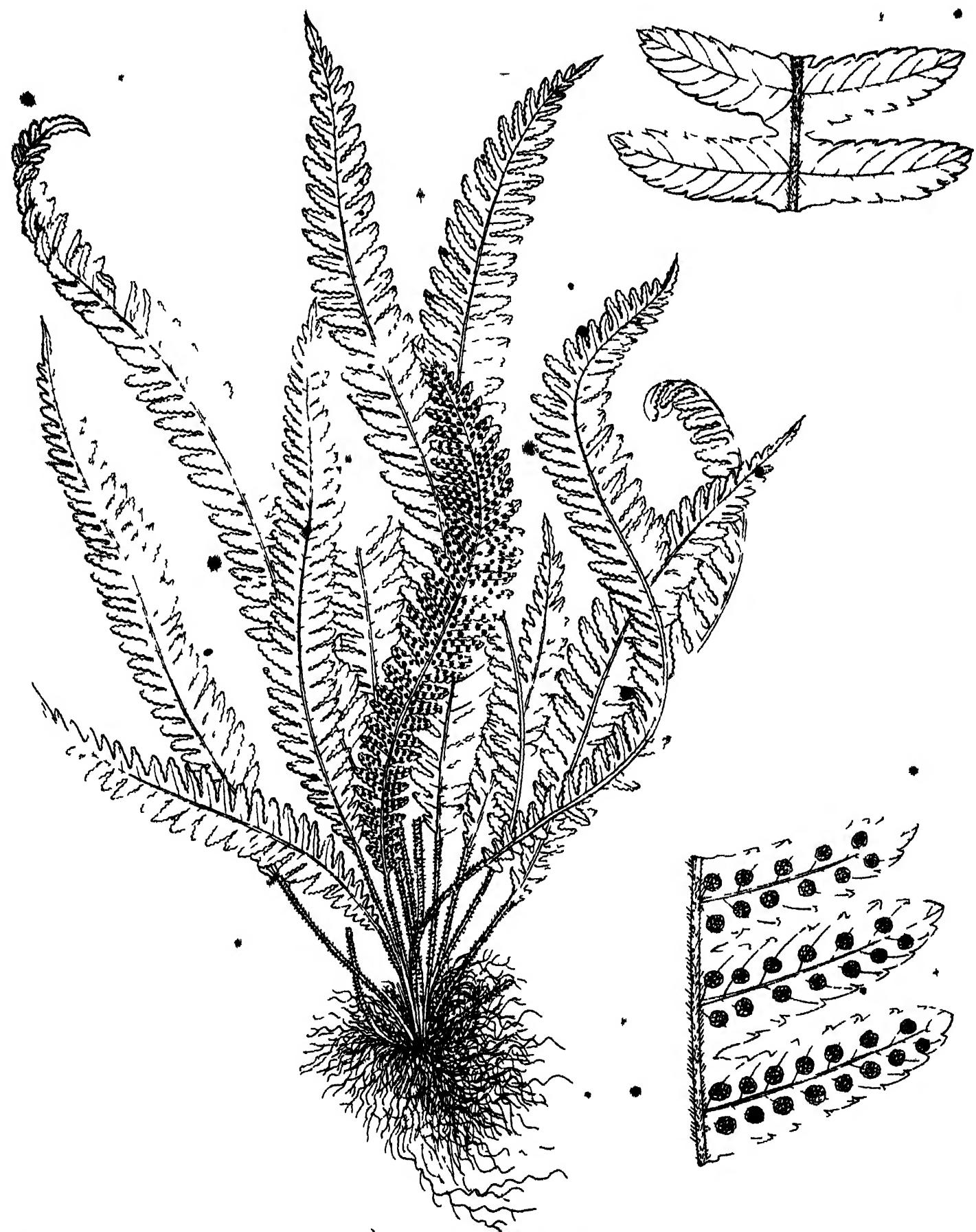
POLYPODIUM (See Ferns of Southern India p. 3)

POLYPODIUM SUBI ALCATUM (Bl.) Caudex small obliquely erect minute rather than paleaceous stipites short 3-8 inces long patent pilose fronds firm membranaceous hairy on both sides and on the costa 6-8 inces long 1-1½ inces broad oblong lanceolate subacute attenuated below deeply almost to the whis pinnatifid segment horizontally patent from a rather broad and decurrent base linear lanceolate acute strongly serrated or pinnatifido serrate lower one remote distinct smaller than the rest costule slender flexuous veins evident distant oblique serrations at the apex seen small globe cone to each serration equidistant between the costule and the margin Hook sp. fil. iv 193—Bl. fil. Jai p. 186 t. 87 A B 1 sm in Hook Town J. t. 111 p. 334 Mitten Jolyp. 152—J. fil. pendulifolium —See en Fil p. 240—6 me Mem p. 11 t. 13 on J. B. J. lebrum fine glabrous

The specimen figured is from the Herbarium of the Calcutta Botanical Garden

Hab. Nepal Kumaon (alt 8000 ft) Sikkim Himalaya Java Luzon

PLATE N. IXXVI



Polypodium sulphuratum
var. *platatum* 114

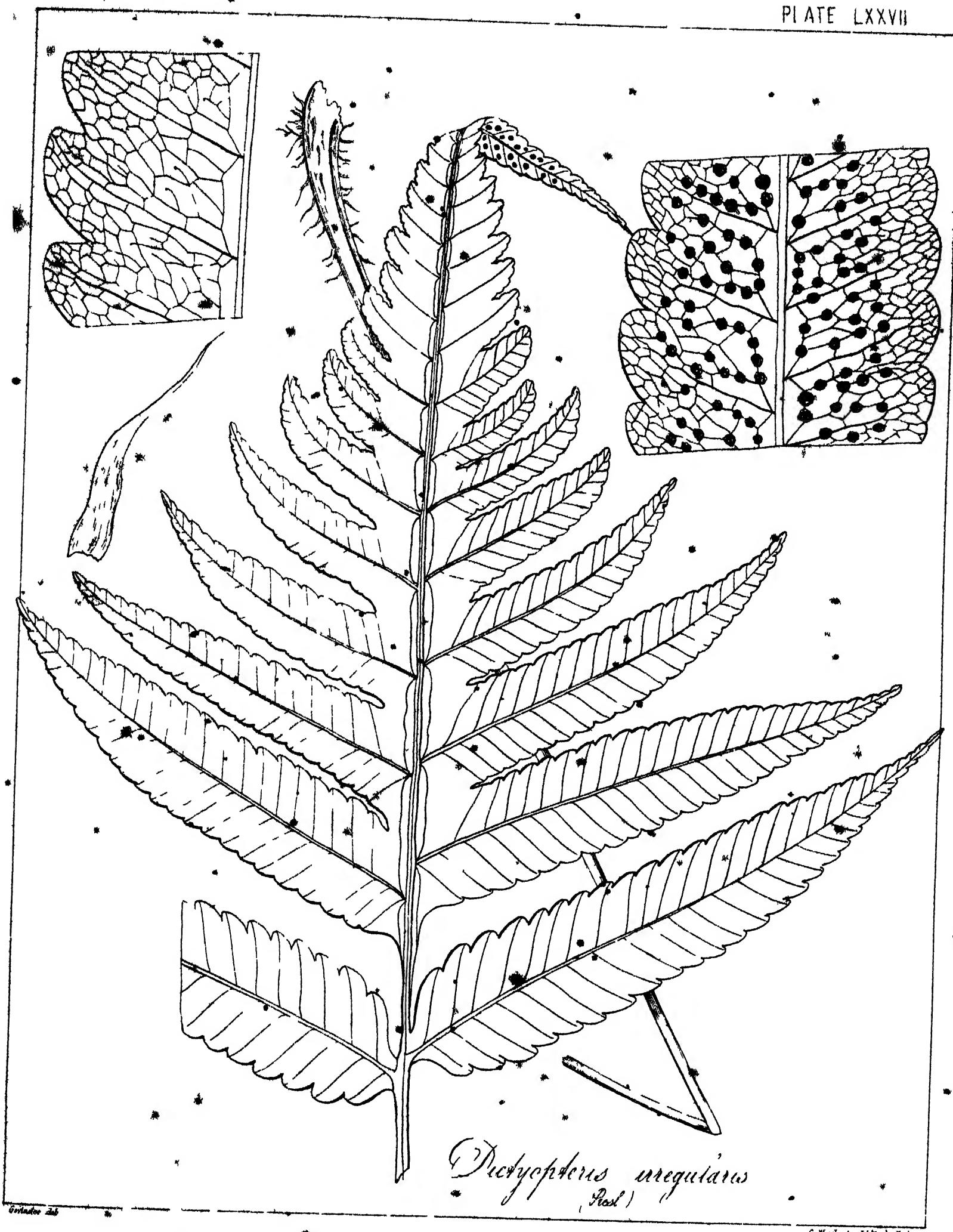
POLYPODII E

DICYOPTERIS (See page 1)

DICYOPTERIS TRILOBLATA (Liebm.) Crude stout ascending stipes tufted 4 inches to 1 $\frac{1}{2}$ foot in length, black to opalecent at the base, fronds suberect, membrane cons minutely pellucido punctulate glabrous often subglaucous beneath, pinnate with very numerous pinnae from 6 inches to 1 foot long, 1-3 inches wide more or less petiolate broad oblong acuminate the lowest half ovate unguis bipinnatifid base segment dissect and sometimes free and 1-6 inches long all of them more or less deeply lobed often within one third of the lobe the lobe oblong acute or acuminate entire or sinuato lobate terminal pinna petiolate pinnatifid costule on to each lobe the veins anastomose copiously forming elongated areoles which are longest near the costa and costules areoles frequently including a free veinlet soon dor or compitil or even terminal on the free veins copious but rarely approaching the costa. *Hort. Sp. L. 1 v. 101 t. 1 R. h. 1 Hau. 1 t. 1 f. 3 Bl. Id. Jav. p. 164 t. 72* —*Dicyopteris Pr. Tent Iterid p. 194 t. 8 f. 7 Moore* —*l. oblonga distiforme Bl. Id. Jav. 13* —*Aspidium Bl. Jav. Tent Iterid p. 160* —*Dicyopteris Moore Ind. Fil. p. 90* —*Phaeopteris Mett. J. J. Hort. J. p. 184 t. 8 f. 29* —*Phae. macrodonta Mett. Pheopt. 1. 31* —*Dicyopteris J. Tent Iterid p. 194 t. 10 f. 126 t. 31 A. f. 2* —*Polypodium confertum Wall. Cat. n. 32* —*Polypodium Kuek. in Bot. Zeit. iv, 7, 424*

* The specimen figured is from the Calcutta Herbarium and represents the upper portion of a large frond **Aspidium?** II CXXVIII of the Ferns of Southern India is undoubtedly this plant and the name on the plate should be altered.

Hab. Mountain Arambol fort (Madras) Malay islands Borneo Java Melanesia Fiji Islands



POLYPODIFÆ

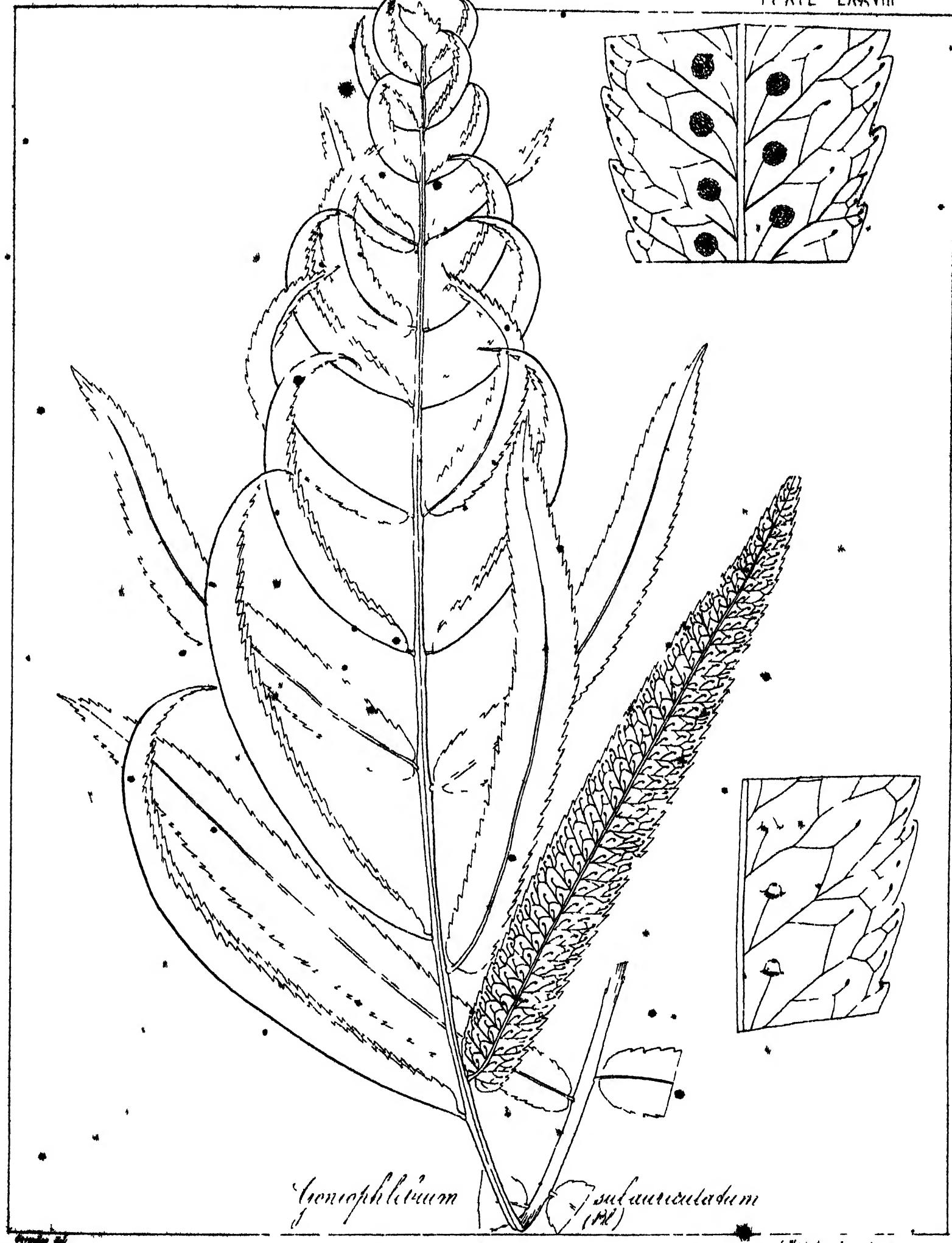
GONIOPHLEBIUM (See page 5)

GONIOPHLEBIUM SUBAURICULATUM (Bl.) Caudex creeping stoloniferous densely clothed with narrow acuminate staceous scales subpinnate stipites a span to a foot and more long sparingly paleaceous rufous brown fronds firm subcoriaceous membranaceous glabrous 2 6 feet long 1 foot and more wide pinnated pinna horizontal numerous yet remote 3 4 to 8 10 inches long $\frac{1}{2}$ to nearly $\frac{1}{2}$ an inch wide shortly petiolated and jointed on the rachis from a somewhat cordate or truncated and occasionally auricled base linear lanceolate finely and gradually acuminate serrated veins forming a double costular series of areoles including a free venule of which the lower series is serriferous marginal veinlets three worn in a single series nearer the costa than the margin forming slightly elevated pustules on the superior side Hook Sp Fil v 32 Il Fil Jav p 147 t 83 Metten Fil Hort Lips p 33 —P Reinwardtii Kze (fide Metten) Goniophlebium Dr Vriese —Gleopeltis Te —var β Serratifolia pinna very coarsely serrated —Goniophlebium serratifolium Brack Fil U S Lexpl Papel p 30 —Polyp pallens Bl Fil Ja t 84 —f 1 J Sm Metten Polypod p 81

The specimen figured is from the Calcutta Herbarium (from Java)

Hab Khasya, Luzon Java Sumatra —Var β Fiji Islands Luzon Java

PLATE No LXXVIII



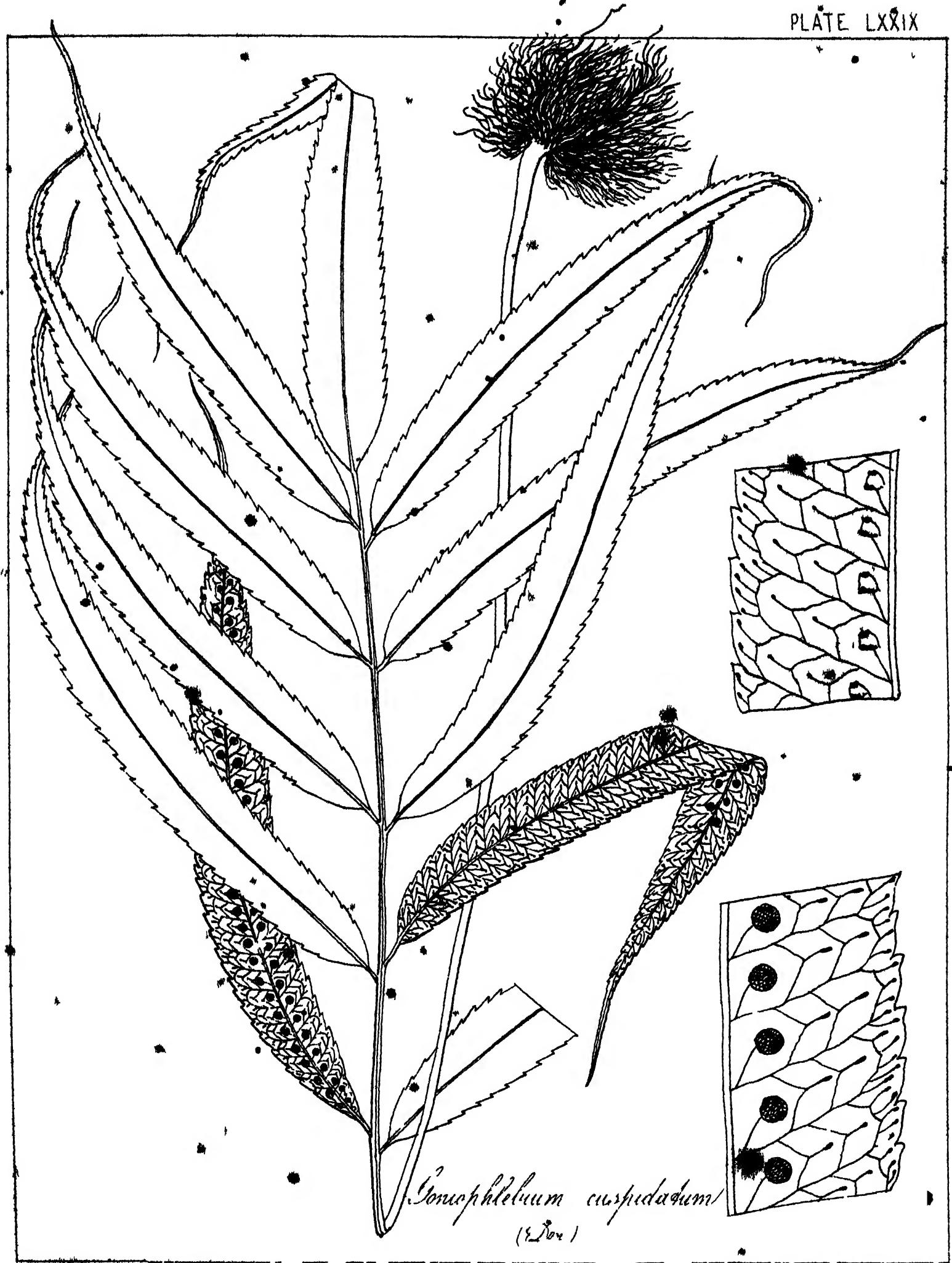
POLYPODIEÆ
GONIOPHLEBIUM

GONIOPHLEBIUM CUSPIDATUM (Don ?) Caudex creeping palmaceous stipites 8-10 inches or more long, fuscous glossy frond 2-3 foot long 1 foot wide oblongo ovate glabrous firm membranaceous pinnate pinnæ shortly petiolate and articulated upon the rachis very patent opposite or alternate 6-8 inches long $\frac{1}{2}$ $\frac{3}{4}$ inch wide from a gradually attenuated narrow cuneate base elongato lanceolate finely and long acuminate serrated entire at the base and at the point veins forming two or three series of areoles including a free veinlet the costal series only soriferous sori much nearer the costa than the margin, more or less sunk and forming more or less distinct pustules on the back *Hook. Sp. Fil. v. 32 Don fil. Nep. p. 6* / *Bl. Fil. Jav. p. 17, 182 Metten. Polyp. p. 81*,—*Gonio phlebium, Pr.*

The specimen figured is from the Calcutta Herbarium (from Java)

Hab. Nepal, Java

PLATE No. LXXXIX



POLYPODIEÆ

* Veins reticulated with free included veinlets

Free veinlets divaricate

DIPTERIS Reinwardt Regensb Bot Zeit 11 3

(*Polyodium* Sp *Auct* *Drynariae* Sp *J Sm*)

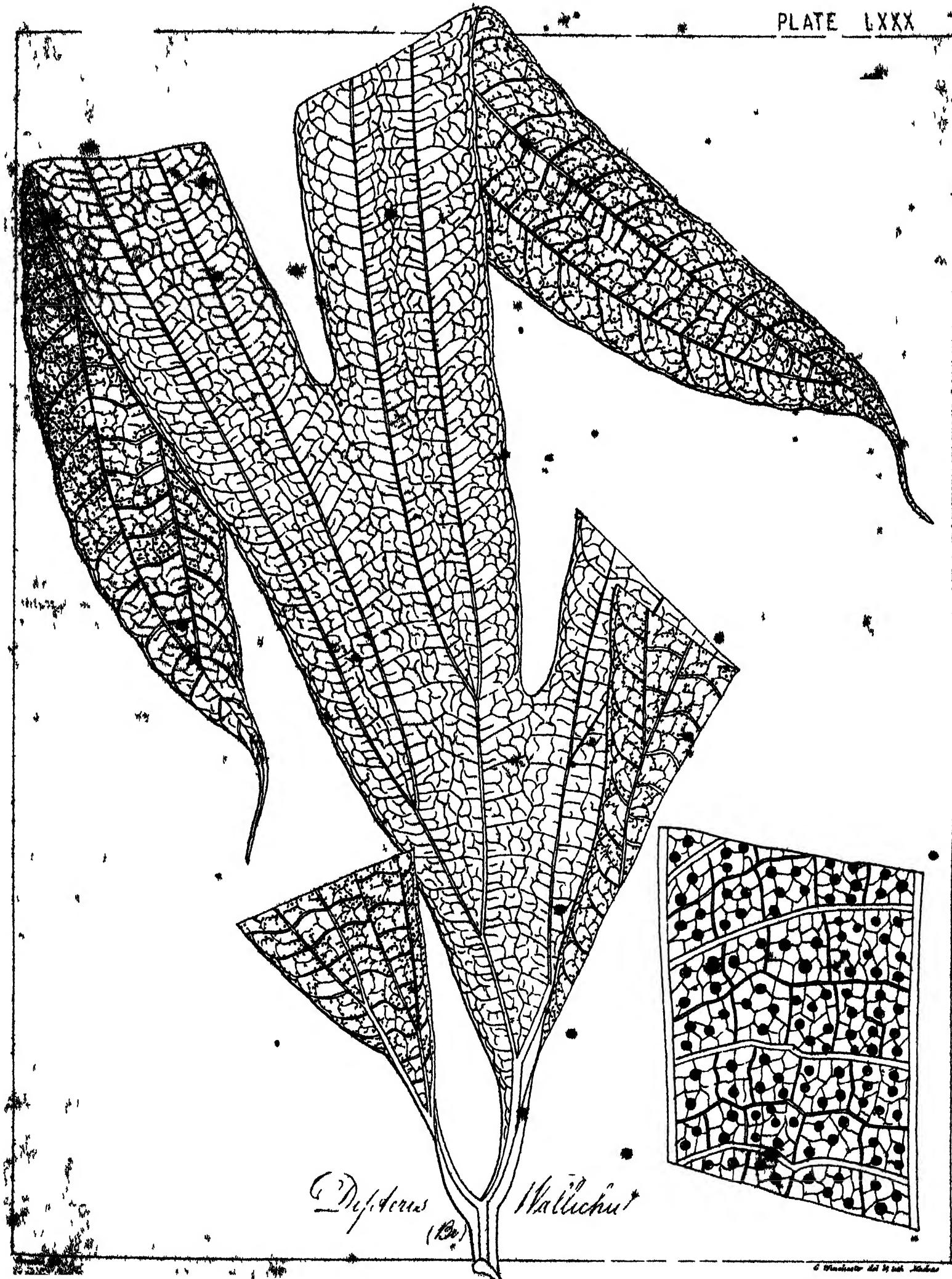
Sori non indusiate small round superficial the receptacles punctiform (1) Transversely sub serial between the branches of a dichotomous costa when the segments are confluent or (2) longitudinally uniserial on each side a central costa in the ultimate segments when more distinct Venation diverse (1) in the more confluent species the costa dichotomous flabelliform with the veins prominent transversely anastomosing the venules and veinlets (several series) thickly anastomosing the ultimate or penultimate soriferous the ultimate branches often free dilated at the apex or (2) in the more distinctly divided species costa central, the veins and venules irregularly anastomosing with divaricate free sterile veinlets

Fronds binate digitato palmately lobed or repitito dichotomously pinnatifid elongately stipitate coriaceous Rhizome woody creeping the fronds adherent or not readily separable So remarkable and peculiar in habit that relying partly on the oligocarpous sori we have kept it distinct from our *Pleopeltis* with which in company with *Drynaria* it is technically allied (Moore)

DIPTERIS WALlichii (Br) Caudex creeping clothed with appressed copious black hard subulate setaceous scale wrinkled at the back stipites 1 2 and more feet long smooth and polished fronds coriaceous 1 2½ feet long and much wider than long dark green above pale yellowish ferruginous beneath flabelliform bipartite into two nearly equal broad cuneate portions which are palmately and dichotomously divided ultimate segments 6 8 10 inches long 1½ 2 inches wide oblong acuminate costæ from the summit of the stipes dichotomously branched through the disk of the frond a single pair runs through each terminal segment connivent at the apex venation manifest prominent beneath all the costæ are united by transverse flexuose costules these by a longitudinal flexuose vein through the middle into two nearly equal series of costular areoles then again into lesser ones all sub quadrangular sori small superficial copious scattered in the areoles but generally in series more or less perfect and accompanied by a resinous or gummy substance Hook Sp Fil 1 99 Br in Hook and Grev Ic Fil 1 168 9 Wall Cut n 287 Metten Polypod p 119, —Drynaria J Sm —Dipteris Moo Ind Fil p 341 —Polyp macrochierios Will Herb

The specimen figured is from the Khasia Hills—(Dr Thomson)

Hab Khasia Bhotan Assam Fundea Mountains



POLYPODIAE

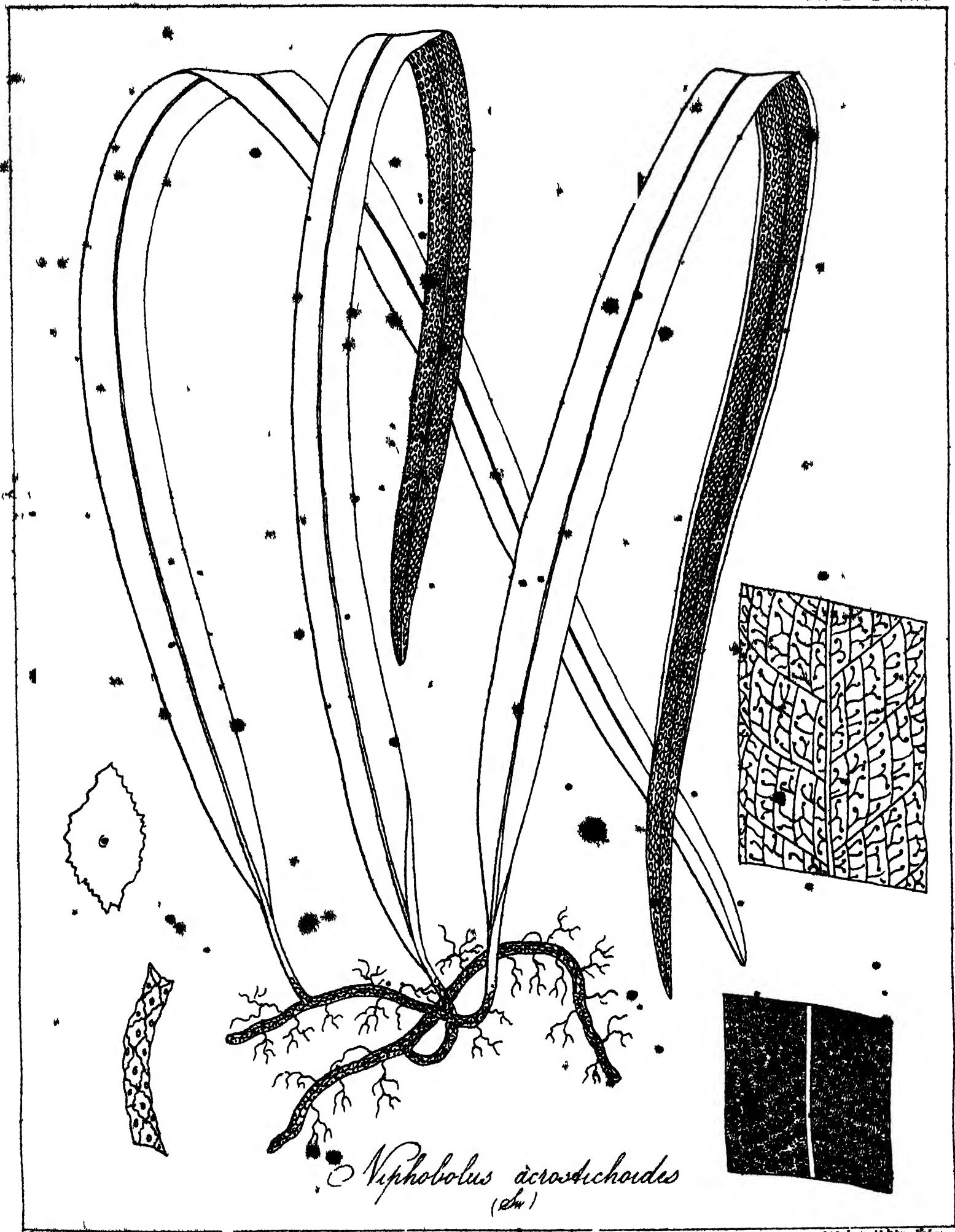
NIPHOBOLUS (See Ferns of Southern India, ' p 61)

NIPHOBOLUS ACROSTICHOIDES (Sw) Caudex creeping branched younger portions squarre with rather large bright ferruginous lanceolate subulate scales stipites 1 3 inches long frond hard coriaceous 1 3 feet and more long $\frac{1}{2}$ 1 inch wide glabrous above beneath whitish or tawny stellate tomentose (tomentum very deciduous) elongate lanceolate or linear obtuse Sterile fronds generally the broadest areoles with 3 6 veinlets free and simple or variously forked and anastomosing still rather small prominent very compact generally occupying the upper part of the frond arranged in 6 8 oblique very close series between the costules Hook Sp Fr v 41 Sw Syn Fil p 29 and 225 An Forst Prod 431 / Metten Polyp p 128 B Prodr p 146 —Cyclophorus P Niphobolus puberulus Bl Fil Jav p 56 t 23,—Cyclophorus glaber Desv (not P Samarensse Metten Polyp p 123),—Gyrosorium P Polyp furfuraceum Wall Cat n 278

The specimen figured is from the Calcutta Herbarium (from Jiva)

Hab Moulmein, Ceylon Java Isle Sumar, Molucca Islands and New Hebrides N E Coast of New Hol and Penang *

PLATE No LXXVI



DICKSONIEÆ

B *Indusium distinctly two valved*

DICKSONIA L. Heritier Sertum Anglum, 30

(*Balantium* *Kaulfuss* *Presl* — *Culcita* *Presl* *Leptoleuria* *Presl* *Cystodium* *J. Smith*, *Davalliae* Sp *Auct* *Cibotum* Sp, *Auct* *Microlepiae* Sp *Auct* *Litaniæ* Sp *Auct* *Nephrolepidis* Sp *Mettenius*)

Sori involucellate indusiate globose or short transverse oblong marginal more or less reflexed the receptacles globose or transverse oblong terminal *Indusium* coriaceous double i.e. two valved the outer or accessory valve formed of a more or less attenuated lobule of the frond cucullate sometimes equaling in size but more frequently larger than the inner valve or proper indusium, which latter when smaller is less convex than the outer. Veins simple forked or pinnate from a central costa *venules* free

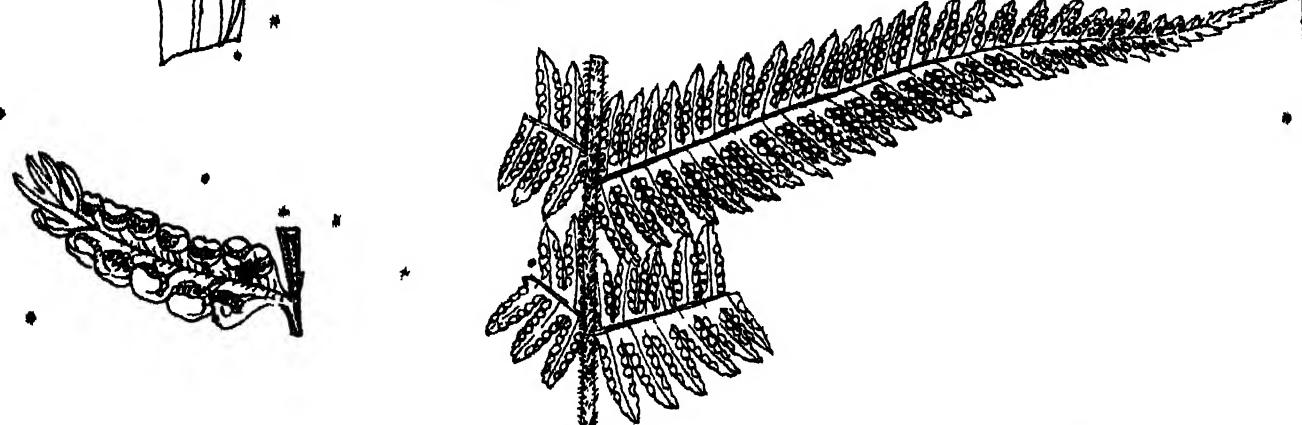
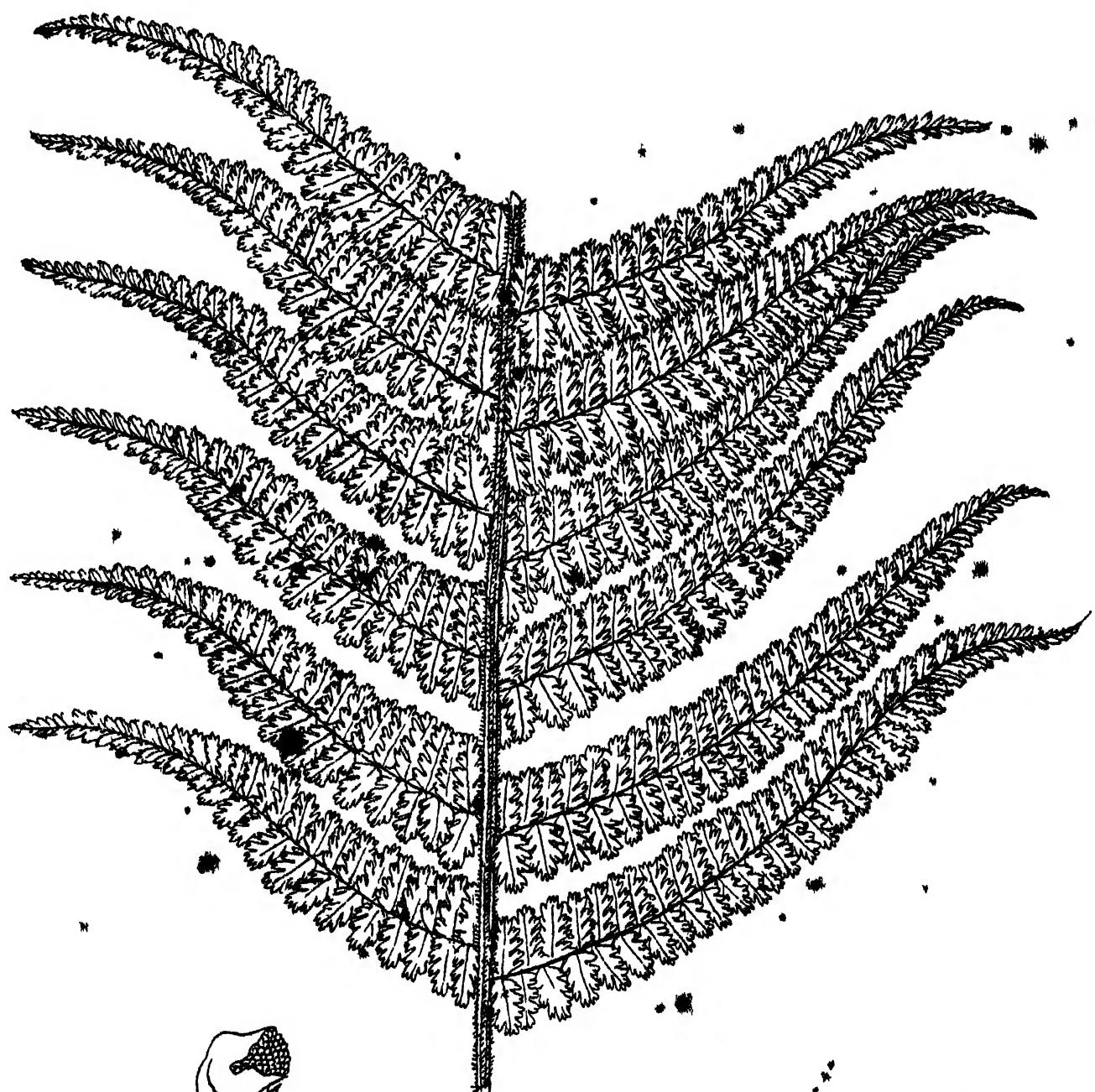
Fronds coriaceous usually large decompound sometimes pinnate the fertile portions appearing somewhat contracted Rhizome thick short erect or arborescent sometimes decumbent, trinervious. A genus of noble ferns including several arborescent species. It is distinguished from *Dennstaedtia* by the two valved not entire cup shaped indusium and from *Cibotium* by the more or less herbaceous texture of the outer valve of the Indusium which in *Dicksonia* is but a partially changed lobule of the frond (Moore)

DICKSONIA APPENDICULATA (Will.) L'vry where especially beneath piloso glandular fronds lanceolate till much attenuated at the base bipinnate pinnae narrow oblong almost linear pinnatifid the segments oblong entire or biunguis the base decurrent on the rachis sori large globose copious upon the shortened teeth of the segments Hook. S; Pl. 179 Wall Cat. n. 6,

The figure is taken from Sir W. Hooker's Sp. Fil.

Hab. Nepal Kumaon

PLATE No. LXXII



(Dicksonia appendiculata)
(Wall.)

DICKSONIÆ

*Indusium distinctly two valved***CIBOTIUM** Kaulfuss Berl Jährs der Ph (1820) Id Enum Fil 229 t 1(Imona, *Gandichaud* — *Hilates Menus M S*, (Hook Sp Fil) — *Dicksonia* Sp *Auct* — *Baluntu* Sp *Auct* — *Aspidia* Sp *Auct* — *Polypodium*, Sp *Auct*)

Sori involucrately indusiate sub globose marginal reflexed the receptacles slightly elevated terminal *Indusium* two valved coriaceous distinct from the substance of the frond the outer valve larger exserting the inner operculiform *Lens* forded or pinnate from a central costa *vennules* free

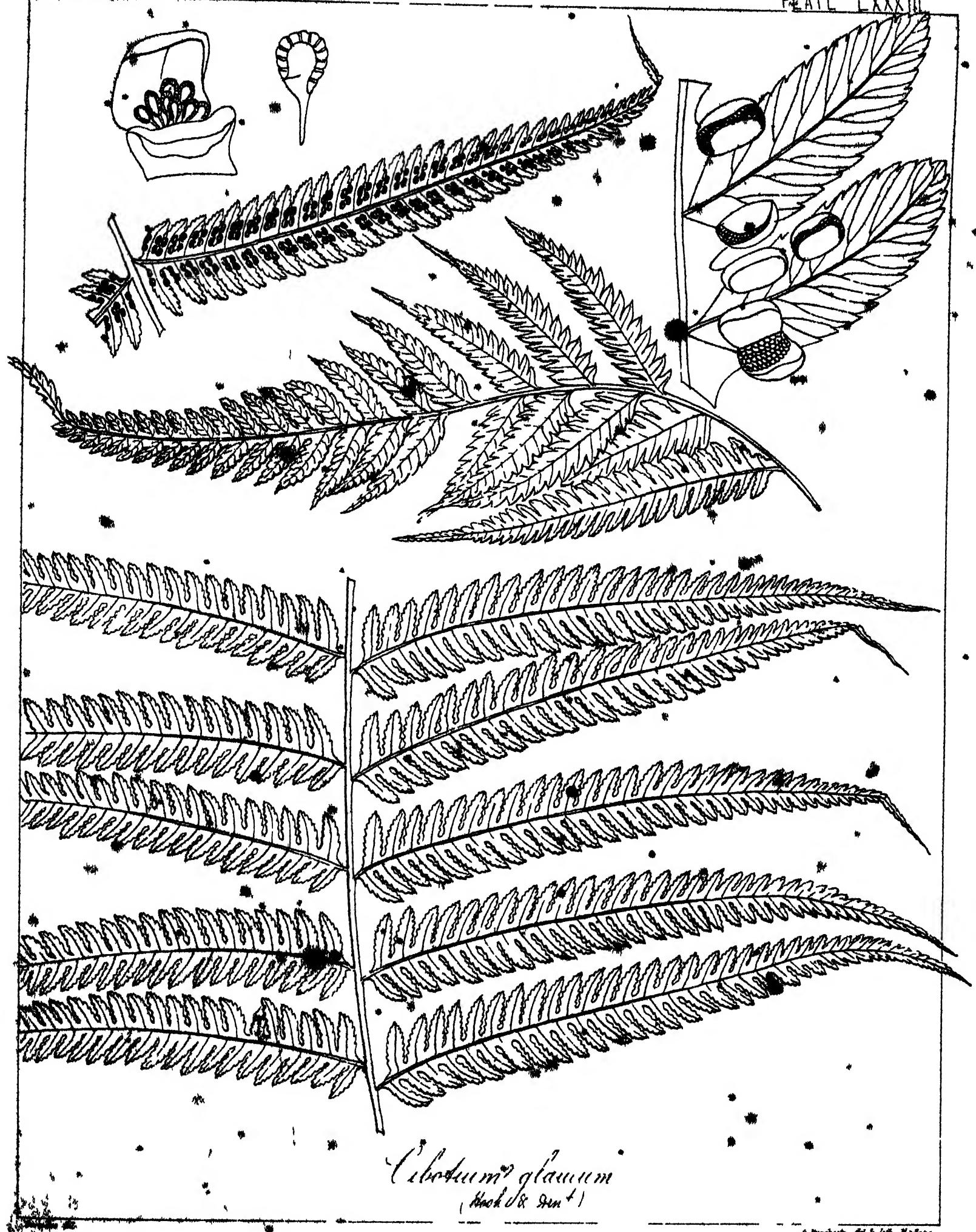
Fronds large decompound Rhizome thick short decumbent or erect This genus like *Dicksonia* has two valved indusia the texture of the two valves is alike and evidently different from that of the frond on the extreme margin of which they are borne (Moore)

CIBOTIUM GLAUCUM (Hook and Arn.) Fronds bipinnate glabrous and shining on the upper side glaucous beneath with occasionally a few hairs on the rachis pinnules deeply pinnatifid lanceolate acuminate 4-5 in long the upper ones diminishing and tapering into a pinnatifid apex lobes or segments numerous more or less falcate veins simple or forked indusia very prominent and coriaceous usually 2 to 4 on each margin of each lobe or sometimes only 1 on each side at the base valves concave very nearly equal or the inner one rather narrower Benth Fil Hongkong, 1460 Hook Sp Fil 182 — C *glaucescens* Kunze Hook Sp Fil 182 — C *Assamicum* Hook loc 183 t 21,

The specimen figured is from Assam

Hab Assam Hongkong S Chin Sandwich Island

PLATE No LXXXIII



ALSOPHILA

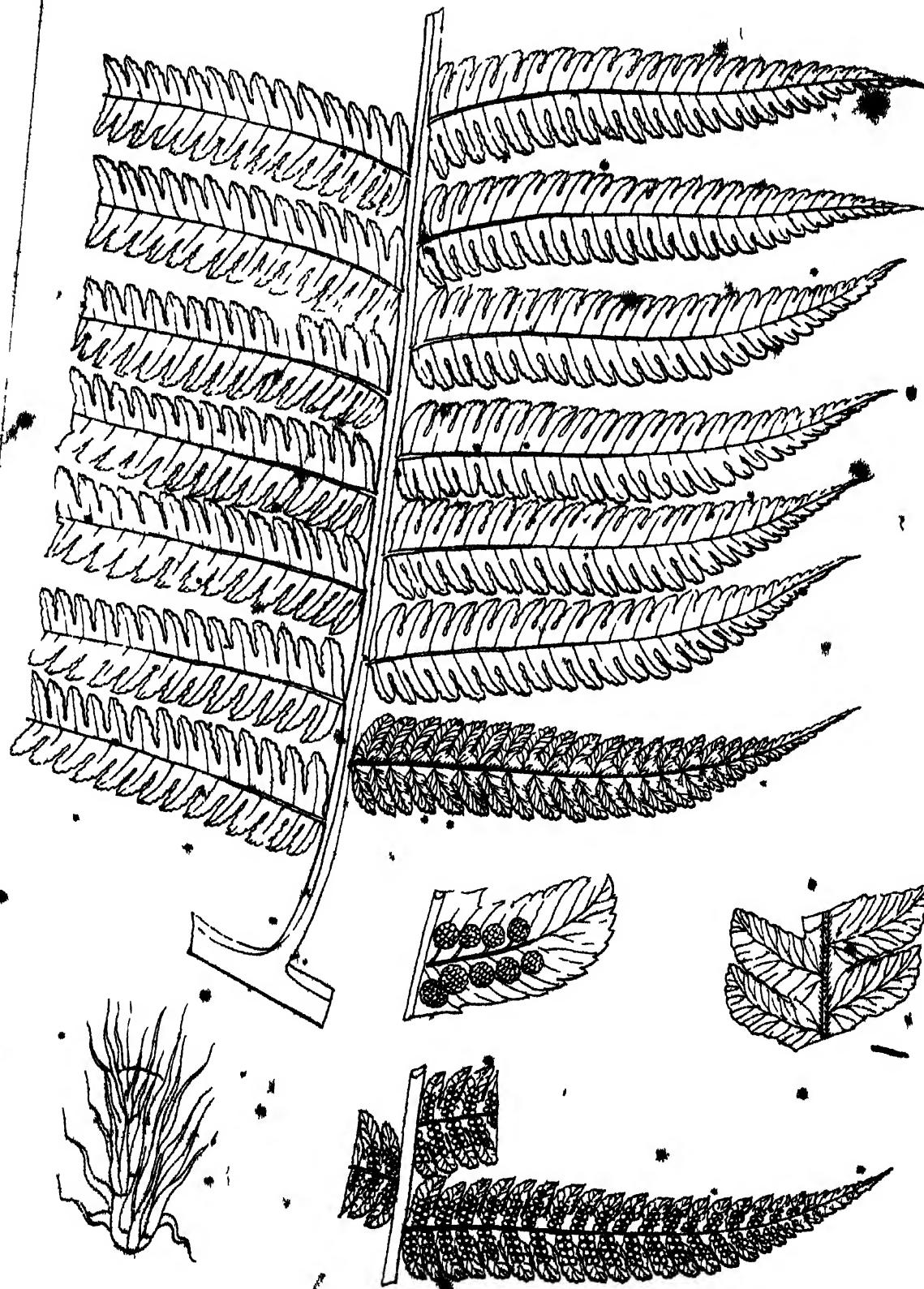
ALSOPHILA (See Flora of Southern India p 19)

ALSOPHILA COMOSA (Wall) Unarmed stipes densely clothed with long chaffy pale brown deciduous scales, rachis strigose or almost setose above fronds bipinnate pinnæ united towards the apex so as to be there pinnatifid pinnules sessile or nearly so oblong lanceolate moderately acuminate submembranaceous pinnatifid about two thirds of the way down, segments ovate slightly falcate obtuse veins generally forked bullate scales none receptaculose small slightly elevated Hook S₁ Fil 1 v3 —A Comosa, Wall Cat n 319

The figure is taken from Sir W Hooker's Species Filicum

Hab Khasya Hills, Singapore, Java

PLATE No LXXXIV



Asplenium comosum
(Willd.)

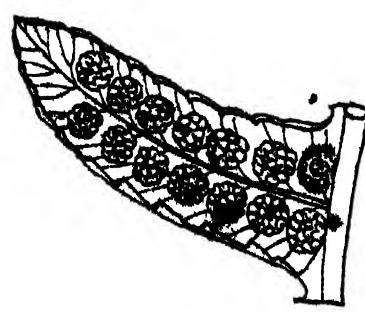
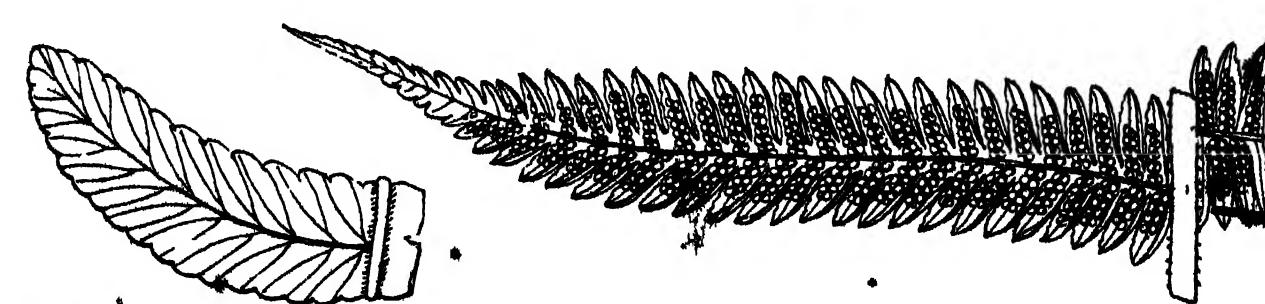
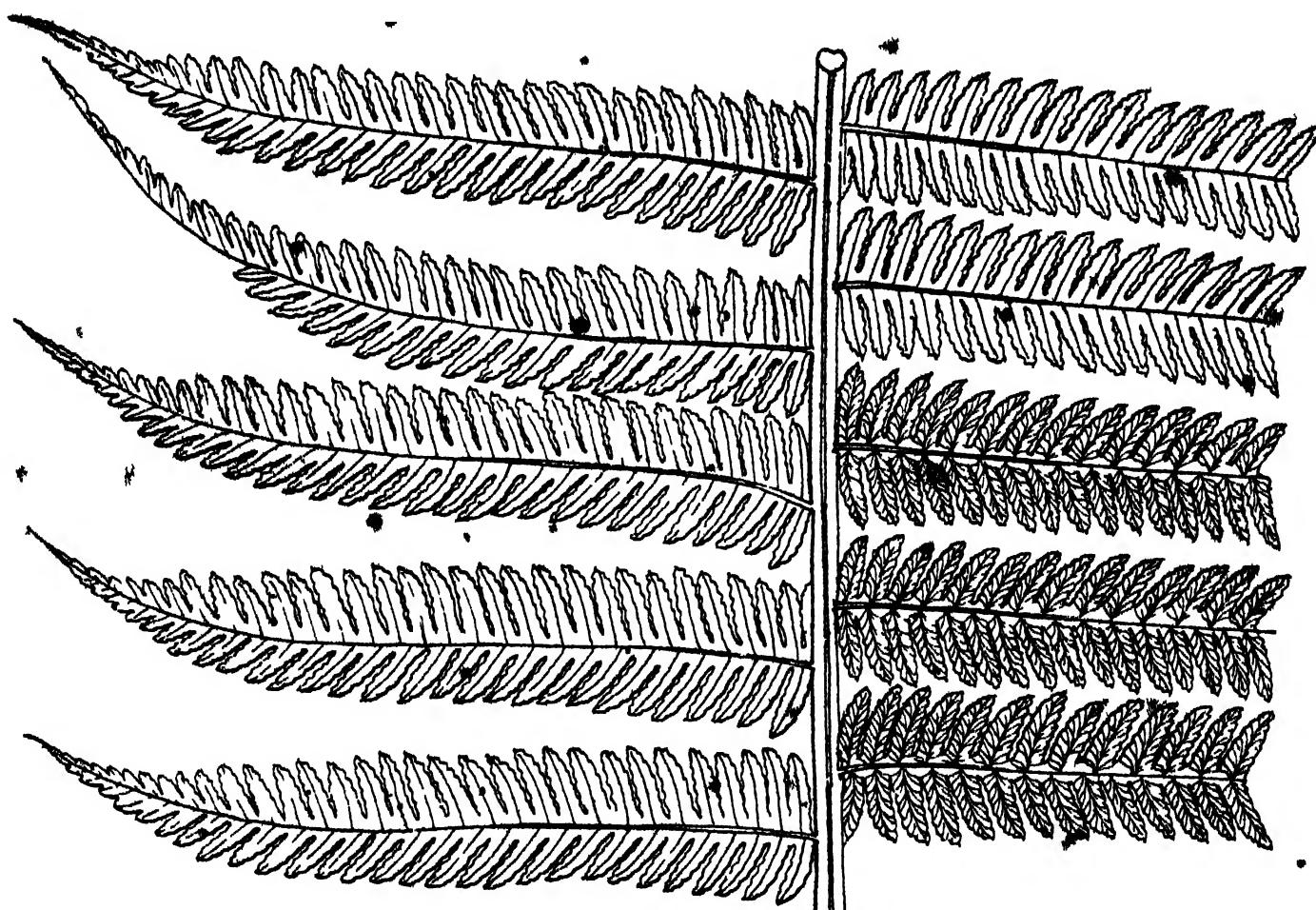
ALSOPHILA

ALSOPHILA CONTAMINANS (Will.) Aculeolate frond bipinnate coriaceous glaucous beneath pinnules oblong lanceo-late acuminate deeply pinnatifid segments oblong foliata the fertile ones narrower rather obtuse crenulate sori upon forked veins in lines parallel with the costæ and covering nearly the whole segment capsules mixed with hairs. *Hook. Sp. Pl. 152* — *A. Contaminans* *Wall. Cat. in Index* — *Olypodium contaminans* *Will. in Will. 1823 Cat. n. 320* — *Chnoophora glauca* *Blume Pl. Ital. 143* — *Alsophila glauca* *J. Sm.*

The figure is taken from Sir W. Hooker's Species Filicum

Hab. Sylhet Penang Java Molucca Luzon South Cunarnes Philippines New Guinea Burma

PLATE N^o. LXXXV



Asplenium contaminans
(Wall.)

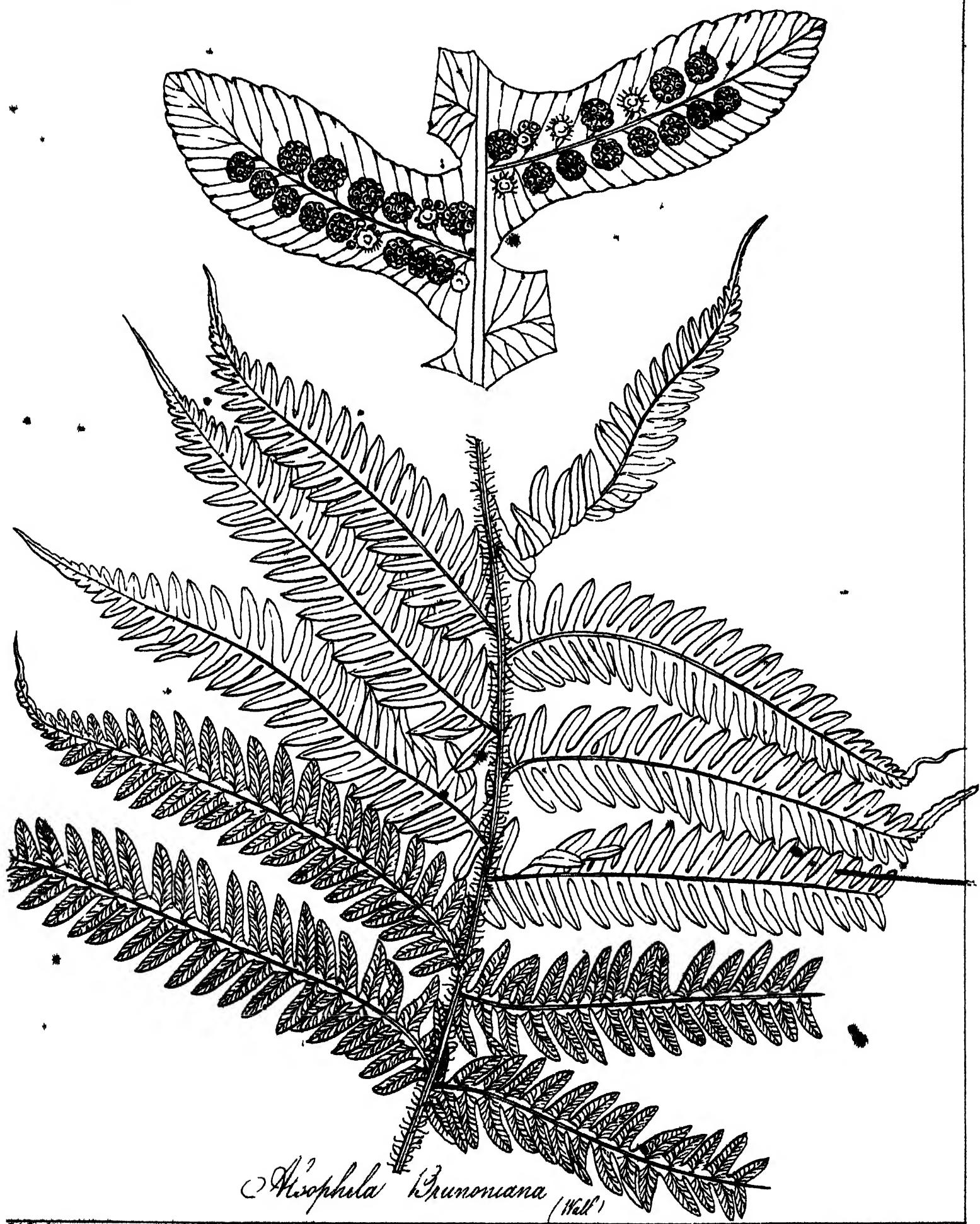
ALSOPHILA

ALSOPHILA RUNONIANA (Wall.) Unarmed, fronds bipinnate pinnules lanceolate acuminate deeply pinnatifid coriaceous glaucous beneath veins once or twice forked bullate scales none margin entire or crenulate sori in two rows occupying the greater part of the segments Hook Sp Pl 1 52 Wall Cat n 7013

The specimen figured is from the Khasya Hills—(Dr. Thomson)

Hab. Khasya Hills Sylhet Mishmee Naga Hills Cachar

PLAIF No LXXXVI



Acrophila Grunowiana (Wall)

CYATHIA

CYATHEA (See Ferns of Southern India p 19)

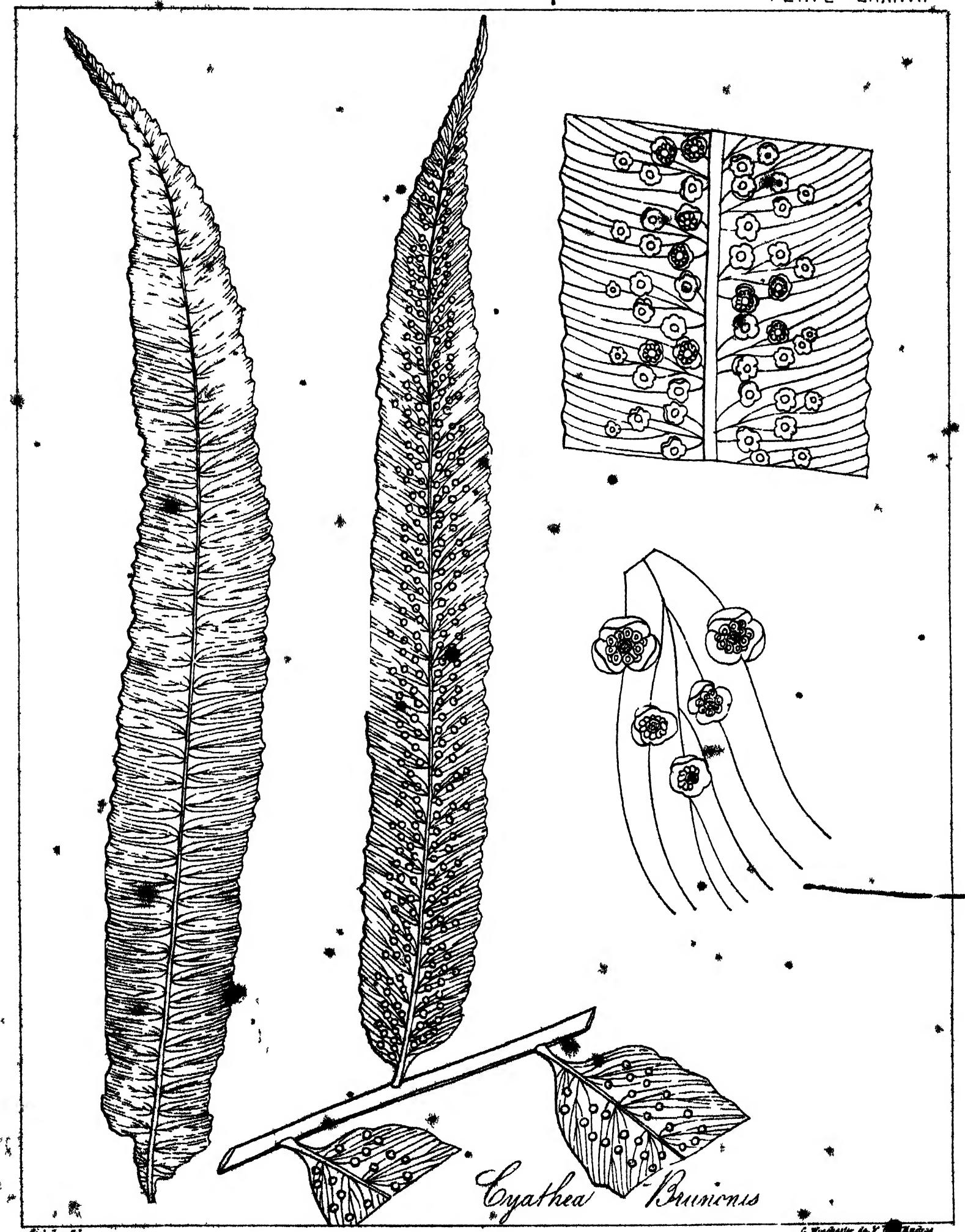
CYATHIA KHUNONIS (Wall) Stipes 1 to 2 feet long fronds 2 to 3 feet pinnated pinna 6 to 8 inches long alternate between membranous and coriaceous blingo laciniate acuminate with a long narrow point obliquely truncated at the base and shortly petiolate sinus acute stem serrated at the margin above Sori copious from the middle of the forked veins or veinlets Involucrum glbose or slightly depressed bursting very irregularly at the top so as to become cup shaped with an incurved and lobed margin Capsules stalked *H. Sy. Fil.* 1. *Will. Cat.* n 179 — *C. longifolia* *etensiformis* *Wall in Herb.* 1823 — *Cyathera Moluccana* *R. Br. Des. Pl.* 322 — *Cyathaea pinnata* *Asrb. Cal. Town. Nat. Hist.* n 17 — *Schizocana Brunnis* — *Hol. Gen. Fil.* 2, — *Schizocana* *Cauda bandu* *Fr. C. n. Fil.* 34

The specimen figured is from Penang

Hab. Penang Malacca Molucca Island Lorne

PLATE No. LXXXVII

PLATE LXXXVII



WOODWARDIA

(Sm Mon Acad Fenn v 411 t 9)

(Tectaria L'Herl — Anchieta L'Herl — Blechnum Sp. Nut)

Sori in a single series oblong or oblong linear sunk in a cavity of the frond parallel with and near the costa or costules / reticulate on the transverse anastomosing veins which form a series of arches next the costa and from which veins originate and are more or less anastomosing sometimes very much so even to the margin. Involucres almost conicous usually persistent and opening with a lid above the cavity.

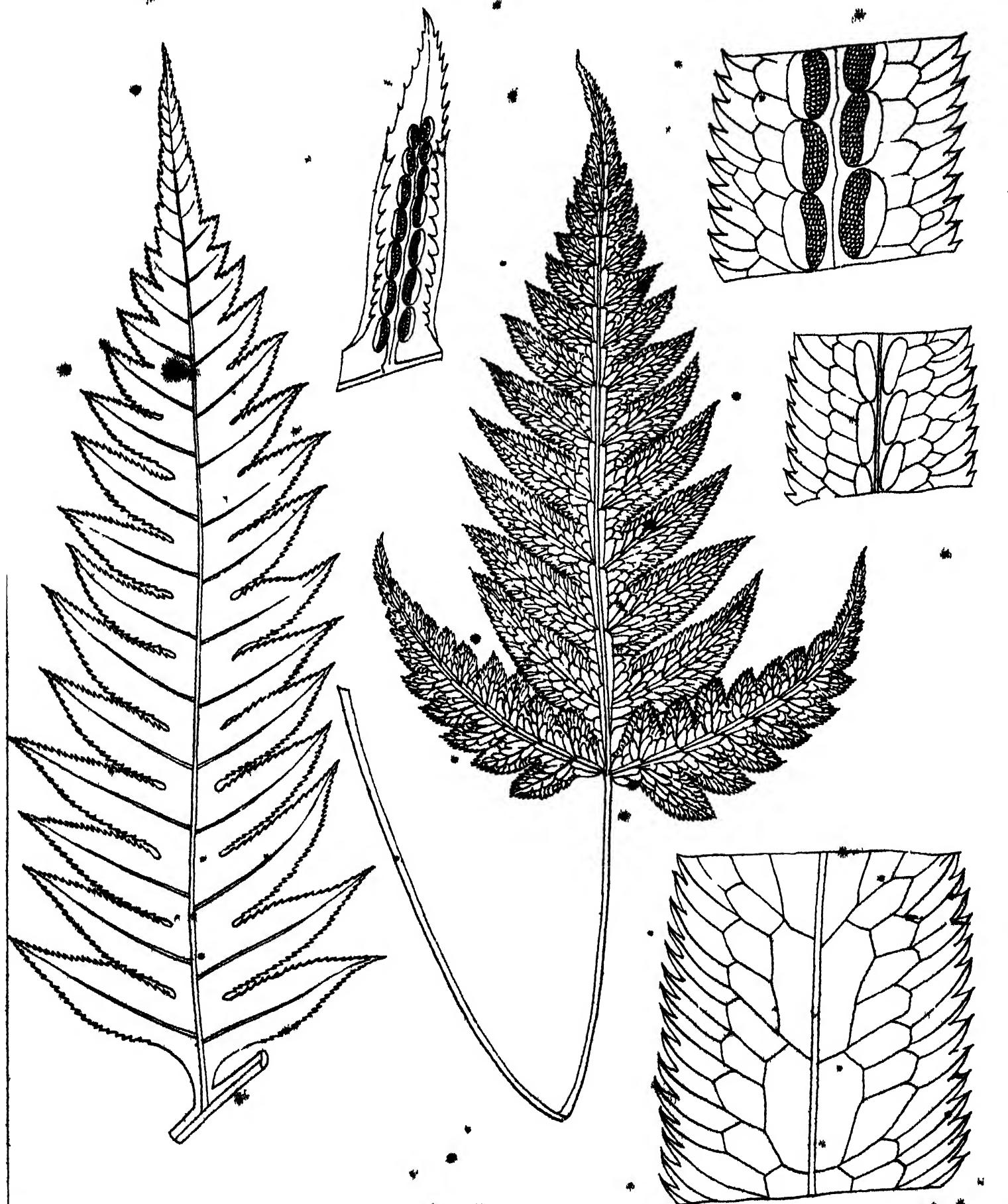
Caudex or rhizome very long and thick decumbent subcylindricous rooting. Stipites very paleaceous at the base with long subulate scales. Fronds pinnated or bipinnate (Hooker)

WOODWARDIA RADICANS (Smith) Stipes elongate with large lanceolate acuminate paleaceous scales at the base for a small pinnate subcoriaceous pinnae distant often a foot or more long petiolate deeply pinnatifid broad lanceolate acuminate laciniate laciniate spinuloso serrate towards the apex veins reticulate towards the main costa (of the pinna) a single series of areoles outside of the sori thence free to the margin so parallel with and near to the costule short oblong sunk in the cavity of the sori which has an elevated margin involucres vaulted conicous rising here and there producing large scaly germinating gomma at the base of some of the pinnae Hook Sp Fil m 66 Smith A / Faw v p 412 — Schk Id p 104 t 112 — (renal in very bad) Sw Syn Fil p 117 Hol Gen Id t 17 — Blechnum radicans Linn Mant p 307 — Woodwardia stans Sw Syn Fil p 117 Schk p 104 t 113 — W auriculata Bl Fn Id Faw p 196

The specimen figured is from Dalhousie — (Col Dyas)

Hab. Himalaya mountains, (alt 10000 feet) Java Madras, Canary Islands Spain Portugal, Italy Sicily

ILLATF No LXXXVIII



Woodwardia radicans
(L.)

PLATE I

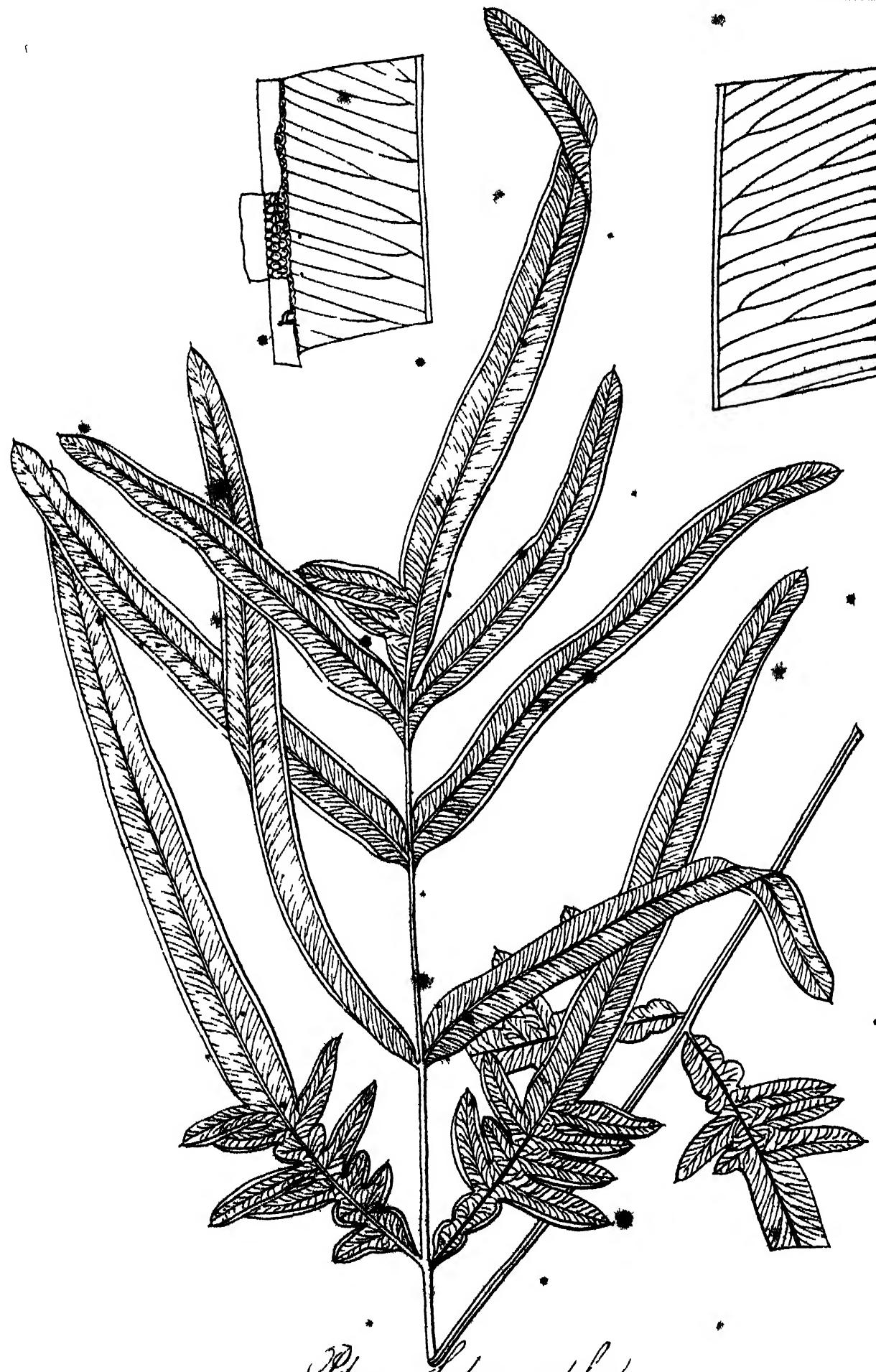
PTERIS (See *Ferns of Southern India* p 11)

PTERIS HETEPOMORPHA (Fee) 1-2 feet high erect firm caudex scarcely any root wiry caespitose frond 1 1/2 foot high basal lanceolate subcoriaceous membranaceous remotely pinnate pinnae usually opposite 4-6 pairs sessile linear lanceolate elongated acuminate 3 to 5 or 6 inches long entire at the margin or subsinuate crenate serrated only at the apex simple (undivided) or here and there with only a single or two horizontal lobes or ears near the base (rarely above the base) at other times the upper pinnae are sparsely lobed and the lower ones gradually more so the lowest ones pinnatifid in their lower half with 4-6 oblong-lanceolate lobes on each side spreading horizontally (almost pectinate) veins approximate simple or once forked veinlets reaching to the margin sori continuous but not extending to the apex involucres marginal membranaceous narrow stipites short in proportion to the length of the fronds and rachises slightly rough to the touch bright tawny glossy Hook Sp Fil n 166 —It heteromorpha Fee Cen Fil p 125 127,—Pt propinquus J Sm En Fil Philipp in Hook Journ of Bot n 10 (not in 1g with name only)

The specimen figured is from Burmish

Hab. Burmish Luzon

PLATE II



Pteris heteromorpha
(3a)

PLATYLOMIA

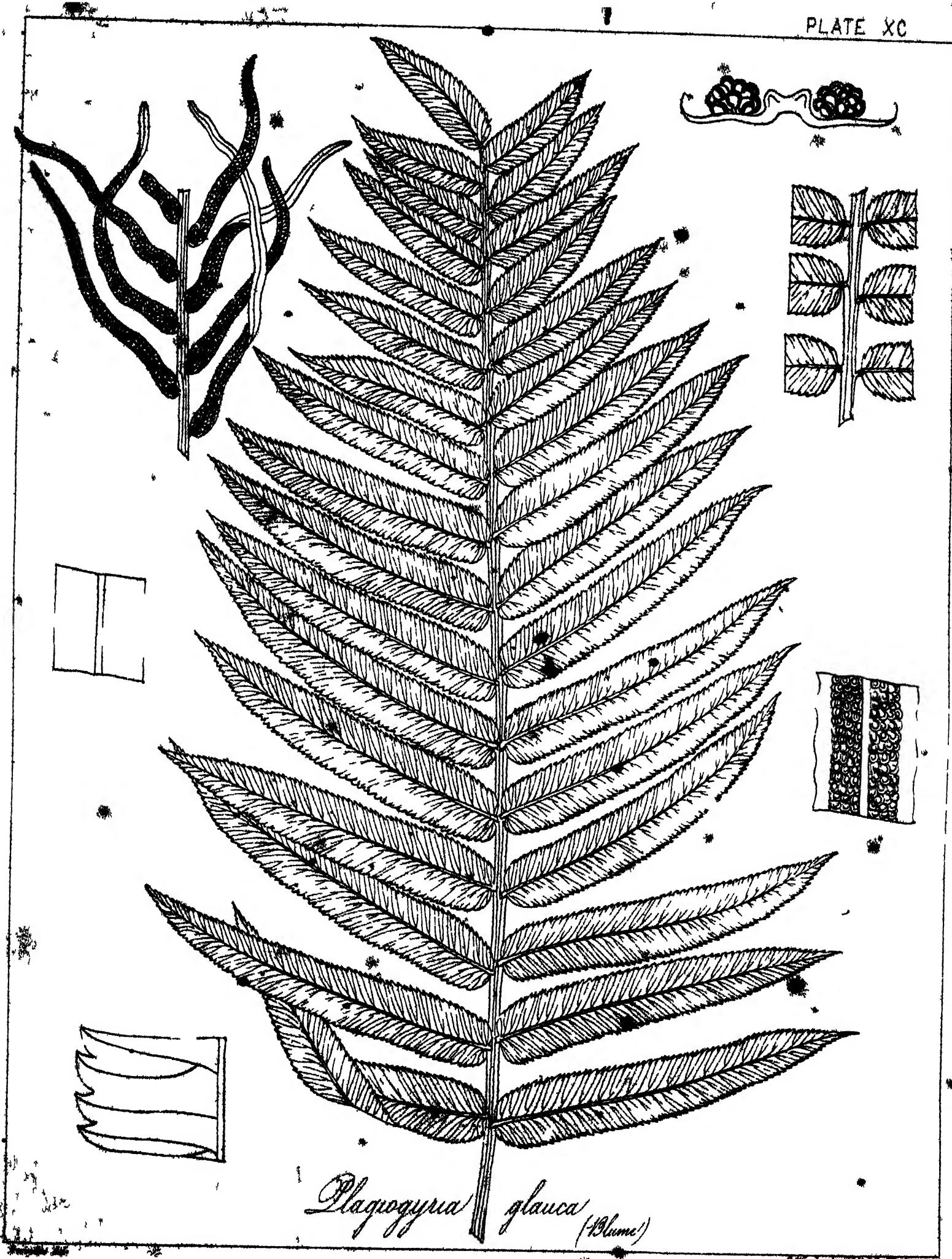
PLACIOVIRIA (See plate 1)

PLACIOVIRIA GLAUCA (Bl.) Lindb. & stipites elongated subcomplected trigonous with two furrows in front the base dilated in petioles on the anterior face bearing spongy depressed glands broad ovato oblong 1 2 f or long pinnated with pinnae numerous 2 inches long, chartaceous horizontally spreading sessile or very nearly so lanceolate acuminate at the base truncated beneath having a gland as much attached to the rachis as to the very short petiole the margins finely dentato serrulate rather more strongly at the apex white and almost powdery beneath green above with a tinge of red veins copious compact simple and forked ultimate hair pinnae confluent into a pinnatifid and lobed caudate apex fertile pinnae narrow linear obtuse erecto patent on very short petioles which sometimes bear a gland beneath sori and inconspicuous as in other *Plagiogyria* Lomaria (*Plagiogyria*) *glauca* Hook Sp Pl in 2^o B & Hil p 204 Ke in Bot Zeit viii p 143 in Schlecht Suppl n 21 & 138—*Plagiogyria glauca* Mett in Plani 179

The specimen figured is from the Kha Yai Hill—(Calcutta Herbarium)

Hab Kha Yai Hill Jiv

PLATE No XC



CYSTOPTERIDEAE

CYSTOPTERIS Leibnizii Lindau Neues Journ Bot 1 Part 11 p 26 t 2 f 9

(Cystopteris Smith — Cyclopteris Gray Aspidium Sp. Nut — Polypodium Sp. Auct — Cyathea Sp. Auct — Nephrodium Sp. Auct Athyrium Sp. Nut)

Sori indusiate the receptacles median *In luxuriant* roundish ovate fructuose or sub hemispherical affixed by its broad base the lvs often lacerate sometimes acuminate Veins simple forked in pinnato from a central costa venules free

Fronds membranaceous herbaceous bi tri pinnate 1 lvsome tufted decumbent or elongated and creeping (Moore)

CYSTOPTERIS FRAGILIS (Linn.) Fronds broad in calyx bipinnate pinnules white or lineolite variously toothed or acuminate or pinnatifid the segments more or less acute entire or again toothed Sori scattered in re or less distinct sometimes crowded and almost confluent rachis winged Hook Sp Fil 1 197 Bernh Ver Journ Bot 1 p 24 — Polypodium, I — Aspidium Willd Sp Pl v p 280 — Cyathea Orientalis Desv

The specimen figured is from Nepal

Hab. Himalayas Simla Nepal Punjab Great Britain and throughout Europe Siberia Asia Minor Persia North and South America, Madeira West Indies, North and South Africa

PLATE No. XCI



Cystopteris fragilis
(L.) Link

ACROPHORUS (See 'Ferns of Southern India' p 3)

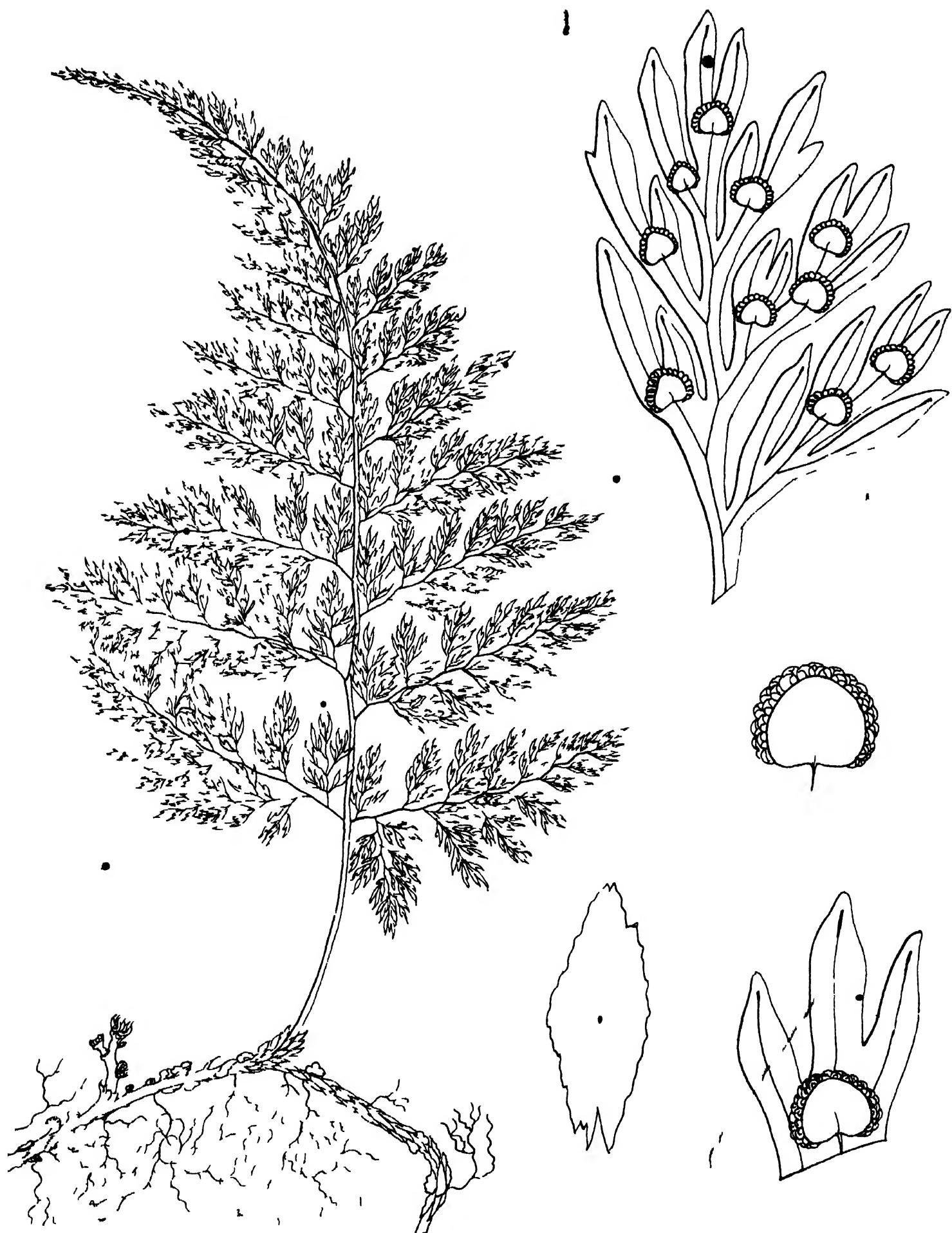
ACROPHORUS PSEUDO LYSTOPTERIS (Kze) Caudex creeping covered with peltate imbricated jagged scales fronds ovate membranaceous supra decompound primary pinnae petiolate ovate lanceolate secondary petiolate ovate oblong pinnules deeply pinnatifid the segments very narrow linear acuminate entire or bifid sori medial on the segments, indusium small sub reniform, veins terminating within the margin

This species somewhat resembles *A. affinis* but the pinnules are more finely cut and the caudex is quite different

The specimen figured is from Dalhousie—(Colonel Dyas)

Hab. Himalayas

PLATE No XCII



Asplenium pseudolaserpitoides

ACROPHORUS

ACROPHORUS NODOSUS (Lam.) Frond tripinnate membranaceous on both sides of the veins pinnules sessile (hairy beneath at their insertions) oblong lanceolate secondary ones sessile oblong obtuse pinnatifid segments cuneiform obtuse lowest ones inciso serrate or at the base again sub auriculate on solitary sub marginal rachis nodose above at the insertion of the pinnule and ferrugineo tomentose stipes slightly rough or glabrous paleaceous below Hook Sp Fil 1 157 —Aspidium nodosum, Bl En Fil Jav p 171 —Acrophorus nodosus P, Aspidium ? foliolosum Wall Cat 359 —Davallia stipellata Wall Cat 260 ; Monochosorum davalliodes, Kze Bot Zeit vi 119—? Anogramma davalliodes Fer Cen Fil 184

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya, Assam, Sikkim, Bhotan, Java, Moluccas

PLATE No XCIII



Scaphiopus nodosus

ACROPHORUS

ACROPHORUS ASSAVICUS (Bedd.) Caudex creeping covered with numerous imbricated chaffy golden scales fronds glaucous shining 8-14 inches long (including the stipes which is 2 to 3 inches) 2 to 3 inches broad coriaceous membranaceous lanceolate pinnate with the primary pinnule alternate or opposite pinnatifid almost to the rachis lower ones petiolate upper ones decurrent so as to form a regular wing to the rachis pinnules pinnatifid segments toothed each bearing one sorus veins terminating within the margin involucres is in the genus

The specimens figured are from Assam—(Dr Thomson) and are marked by Mr Moore—*'New species near membranulosus'*

Hab. As in

PLATE No. CIV



Asplenium keramianum
(L.) H. Lév.

ACROPHORUS

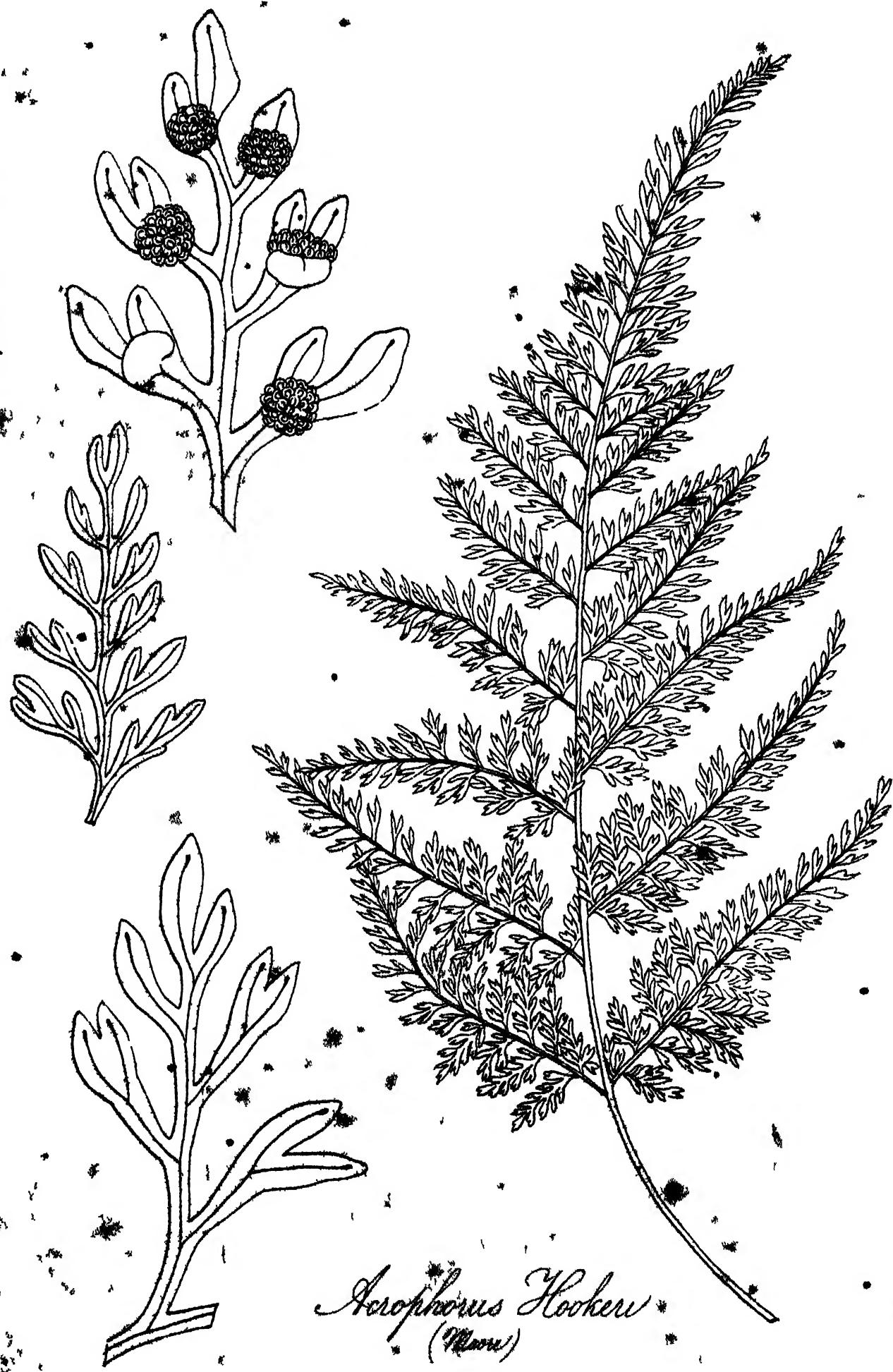
ACROPHORUS HOOKERI (Moore) Fronds ovate or oblongo ovate glabrous membranaceous 6 10 inches long by 4 5 inches broad tripinnate secondary and tertiary rachides much flattened being composed as it were of the decurrent base of the pinnae or pinnules pinnules linear obtuse entire or bifid veins simple or forked and terminating considerably within the margin sori one to each pinnule situated at the forking of the vein indusium as in the genus

A delicate finely cut species with much the appearance of *Asplen tenuifolium* easier understood from the figure than by any description

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Khasya, Sermur Sikkim

PLATE N, 105



Acrophorus Hookeri
(Moss)

ACROPHORUS

ACROPHORUS HYMFNOPHYLLUS (Parish) Caudex creeping furnished with numerous long wiry roots—fronds subglabrous membranaceous very flaccid and transparent ovato or deltoid ovate pinnate lower pinnae deeply pinnatifid with the lower basal segments much the largest and again pinnatifid with the segments entire or crenated the remaining pinnae pinnatifid with the segments crenated Sori at the apex of the superior veinlets of each segment indusium as in the genus veins terminating within the margin

This very delicate species was discovered near Moulmein by the Rev. Parish to whom I am indebted for the specimen figured.

Hab. Moulmein

PLATE No. XCVI



Acrophorus hymenophyllum
(Parsh)

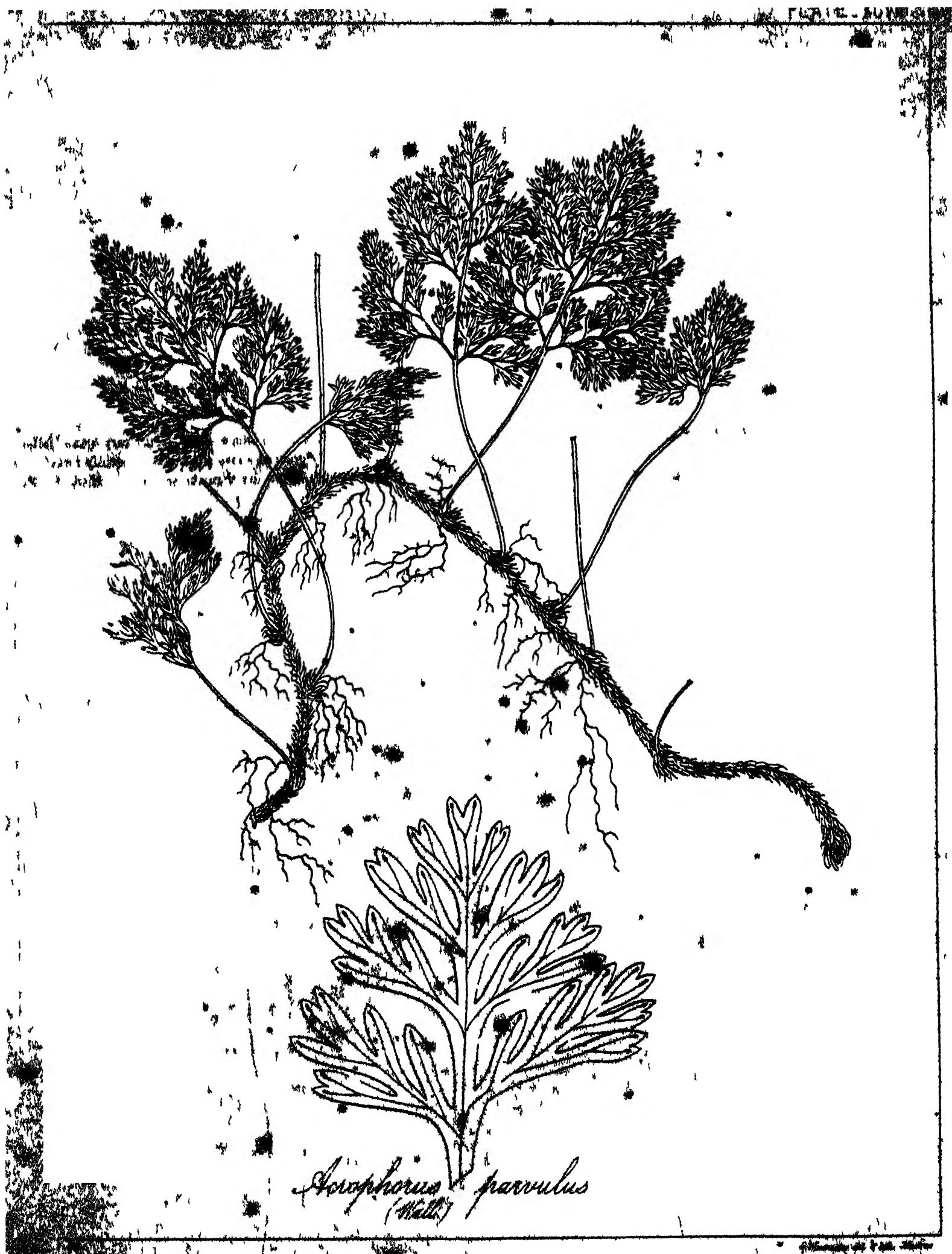
ACROPHORUS

ACROPHORUS PARVULUS (Wall) Caudex long creeping clothed with lax subulate scales, frond very small deltoidi tripinnatifid glabrous rigid (from the stout costa) segments linear throughout slightly grooved above when dry unequally forked and acute at the apices sori at the sinus of the forks involucres suborbicular dilated above and broader than the segments *Hool Sp Fil* 1 160 *Wall Cat n 247 Hook Et Grrev Ic Fil f 138*,—Leucostegia, J Sm

The specimen figured is from the Calcutta Herbarium, but unfortunately not in fructification

Hab Singapore, Borneo, Java

PLATE No XCVII



Asplenium pinnulus
(Wall.)

ACROPHORUS

ACROPHORUS MEMBRANULOSUS (Wall) Caudex hispid with very long slender subulate rigid membranaceous scales, frond small very thin and membranaceous ovato lanceolate and as well as the slender stipes and rachis pubescent hirsute bipinnate pinnæ alternate lanceolate their rachis winged pinnules lanceolate pinnatifid the segments ovato lanceolate subfalcate very acute entire or rarely toothed involucres small ovato subrotund acute very thin and membranaceous fixed by the broad base, the rest free Hook S. Pl 1 159 Wall Cat n 25.

* The figure is taken from Sir W. Hooker's Species Filicum

Hu^h Nepal

PLATE No XCVIII



Polypodium membranulosus
Gmel.

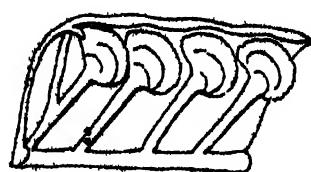
HUMATA (See Ferns of Southern India, p 4)

HUMATA PARALLELA (Wall) Caudex creeping, paleaceous fronds stipitate coriaceous ovato lanceolate acuminate deeply pinnatifid nearly to the rachis segments close parallel horizontally patent linear or linear oblong subfalcate entire the lowermost pair sometimes with a solitary obtuse lobe at the base beneath rarely more involucres semiorbicular copious marginal but all pointing towards the apex of the segments in two close parallel lines (not pointing towards the margins) veins thickened sunk *Hook Sp Pl* 153 *Wall Cat* n 251,—*Nephrodium Gammardianum* *Gaud in Freyc Voy Bot t 12 f 1*

• The specimen figured is from Birmah—(Parsh)

Lab Singapore Birmah, Moluccas Sandwich Islands Luzon

PLATE No XCIX .



Humata parallela
(Wall.)

HUMATA

HUMATA HETEROPHYLLA (Sm) Caudex long creeping scaly and hispid with the long reflexed points of the scales, fronds coriaceous, stipitate arising from a scaly bulb sterile ones oblong or ovato lanceolate acuminate entire often ~~winged~~, fertiles ones linear lanceolate acuminate deeply sinuato pinnatifid the lobes horizontal crenate involucres reniform copious on the crannies of the lobes Hook Sp Pl 1 152 Sm Act Taur v p 41. Willd Sp Pl v p 565 Sw Syn Pl p 130 and 337 Hook et Grev Ic Pl p 230 —Humata ophioglossa, Cav Pl 1801 n 678, —Davallia pinnatifida, Sw Syn Pl p 130 Willd Sp Pl v p 465, —Humata pinnatifida " Cav Pl 1801 n 679 —Davallia lobulosa, Wall Cat n 241

The specimen figured is from Singapore

Hab Singapore Penang Malay Islands Java Isle Samar



PLATE No C



heterophylla

MICROLEPIA (See "Ferns of Southern India" p 5)

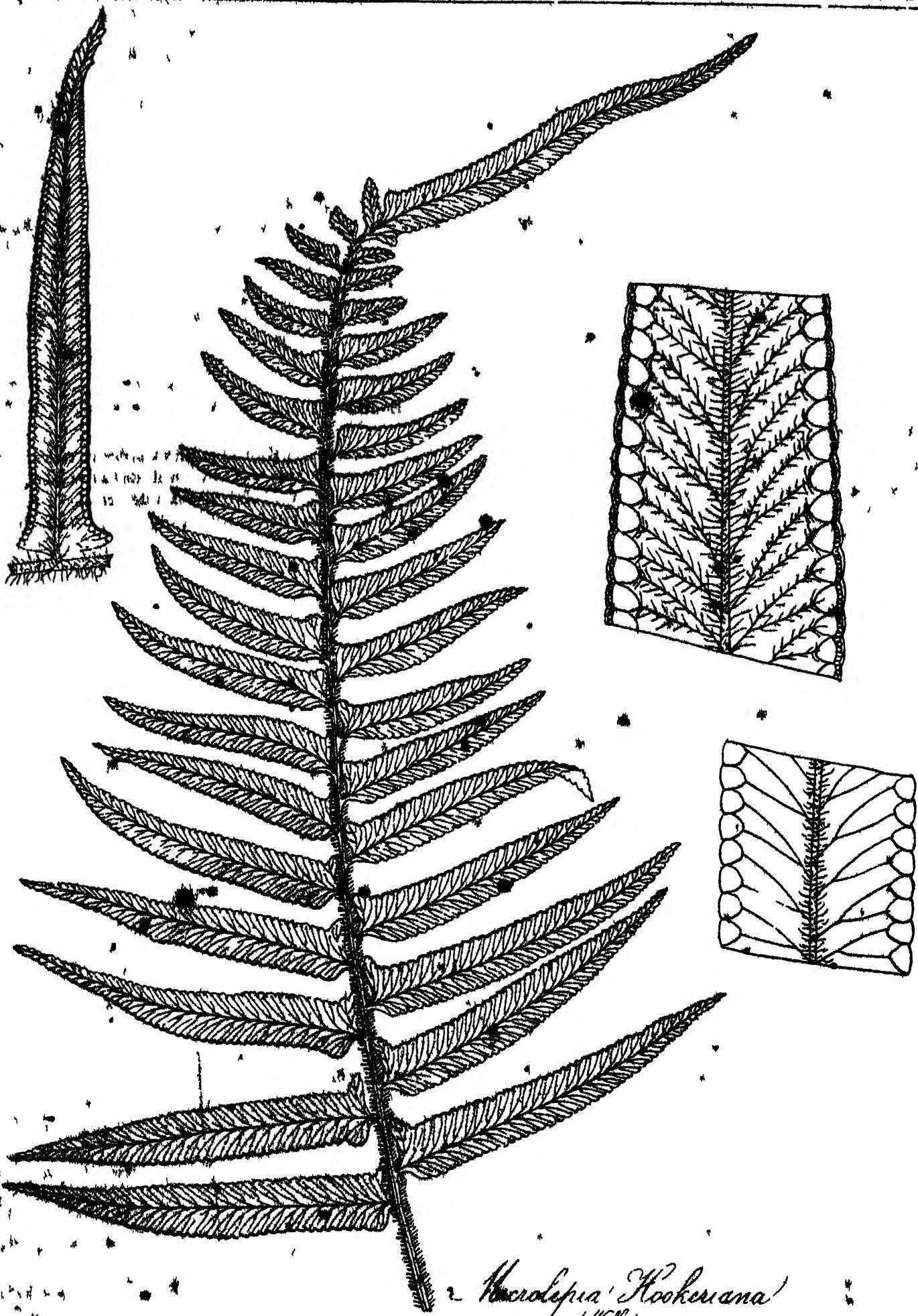
MICROLEPIA HOOKERIANA (Wall) Stipes a foot and more long pubescent at length glabrous rachis hirsuto-pubescent, fronds lanceolate pinnate, pinnae subpetiolate lanceolate from a broad hastate base, gradually acuminate submembranaceous, plicato crenated sparingly hairy on the costa and veins beneath veins parallel dichotomous sori approximate, forming a continued line at the base of the crenatures of the margin, involucres half cup shaped stipes and rachis pubescenti hirsute. Hook Sp Pl.

172 Wall Cat n 2684

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya, Sylhet, Kumaon, Assam

PLATE No CI



Macrolepia Hookeriana
(Wall)

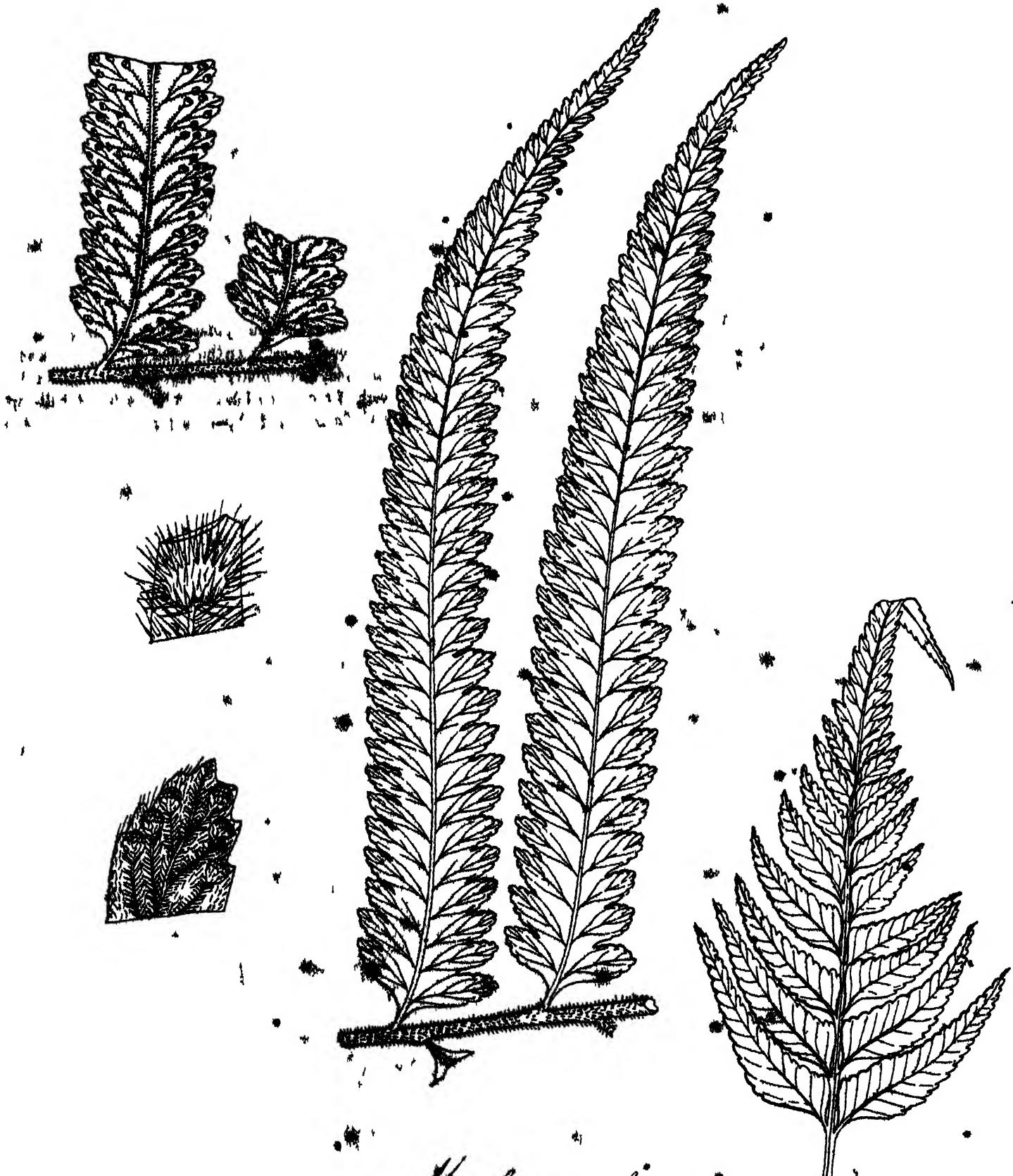
MICROLEPIA

MICROLEPIA SCABRA (Don) Fronds broadly ovato lanceolate firm membranaceous, pinnae elongate lanceolate sub falcate acuminate pinnatifido lobate the acuminate apices serrated pubescenti villous beneath, most so on the costa and prominent veins unequally cuneate at the base and subpetiolate, lobes acute crenato dentate, veins pinnated, sori solitary in the axils of the smaller and upper lobes or serratures and distant from the margin, marginal on the small teeth of the larger lobes, involucres broad half cup-shaped, densely villous, rachis and stipes downy, the latter at length glabrous *Hook Sp Fl* 1 172,—*Davallia villosa* *Wall. Cat* n. 244—(not Don)

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab. Himalayas, Nepal

PLATE No CII



Microlepia scabria
(2m.)

MICROLEPIA

MICROLEPIA UROPHYLLA (Wall) Fronds (tufted ?) tall lanceolate firm membranaceous, pinnae elongate lanceolate subfalcate acuminate pinnatifido lobate, the apices serrated, everywhere glabrous except the costa beneath which is pubescent unequally cuneate at the base and distinctly petiolate, lobes acute crenato dentate veins pinnated sori along the toothed margin of the lobes involucres shallow, half cup shaped glabrous or ciliate rachis and stipes slightly downy the latter at length glabrous —*Davalha calvescens* Wall Cat n 2983 *Hook Sp Fil* 1 172 —*Davalha urophylla* Wall Cat n 2683

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya, Kumaon

PLATE No CIII



Nucolaena propphylla (Wall.)

DAVALLIA (See "Ferns of Southern India," p 5)

DAVALLIA SOLIDA (Sw) Tali, caudex stout creeping clothed with densely imbricated scales fronds coriaceous tri sub quadri pinnate pinnae acuminate, pinnules trapeziform acuminate pinnatifid many veined terminal ones serrato serrate coadunate into an acuminate point involucres linear oblong sunk in a tooth or segment having a narrow wing on each side or entire *Hook Sp Fil* t 163 *Sw Syn Fil* p 132 an t 345 *Willd Sp Pl* v p 470 *Sokkh Fil* t 126 — 'D procera *Hedw Fil Fasc* iv tab (in desc elegans) fide *Sw* — variety β *latifolia* pinnules wider soriferous segments entire (without terminal teeth), —D ornata, *Wall Cat* n 246 — *Stenolobus ornatus* Pr (name only) — variety γ *caudata* pinnae narrower, apices of the pinnules long caudate involucres with a small incurved terminal tooth on one or both sides, sometimes entire *D caudata* *Wall Cat* n 2220 an *Sw* ? — *Stenolobus Kunzeanus* Pr *Tent Pterid* p 130 t 4 f 30 (name and figure only) — D elegans, *Aze herb nec Swart* (Pr) —D solida, *lacera*, *Bl En Fil Jav* p 234 — *Trichomanes solidum* *Forster Prodr* n 475

The specimen figured is from Moulmein—(Parish)

Hab Pacific Islands Otaheite New Islands Pitcairns Island Malden Island Java Moulmein, Penang Singapo
Luzon Island of Vanicoro

PLATE No CIV



Davallia

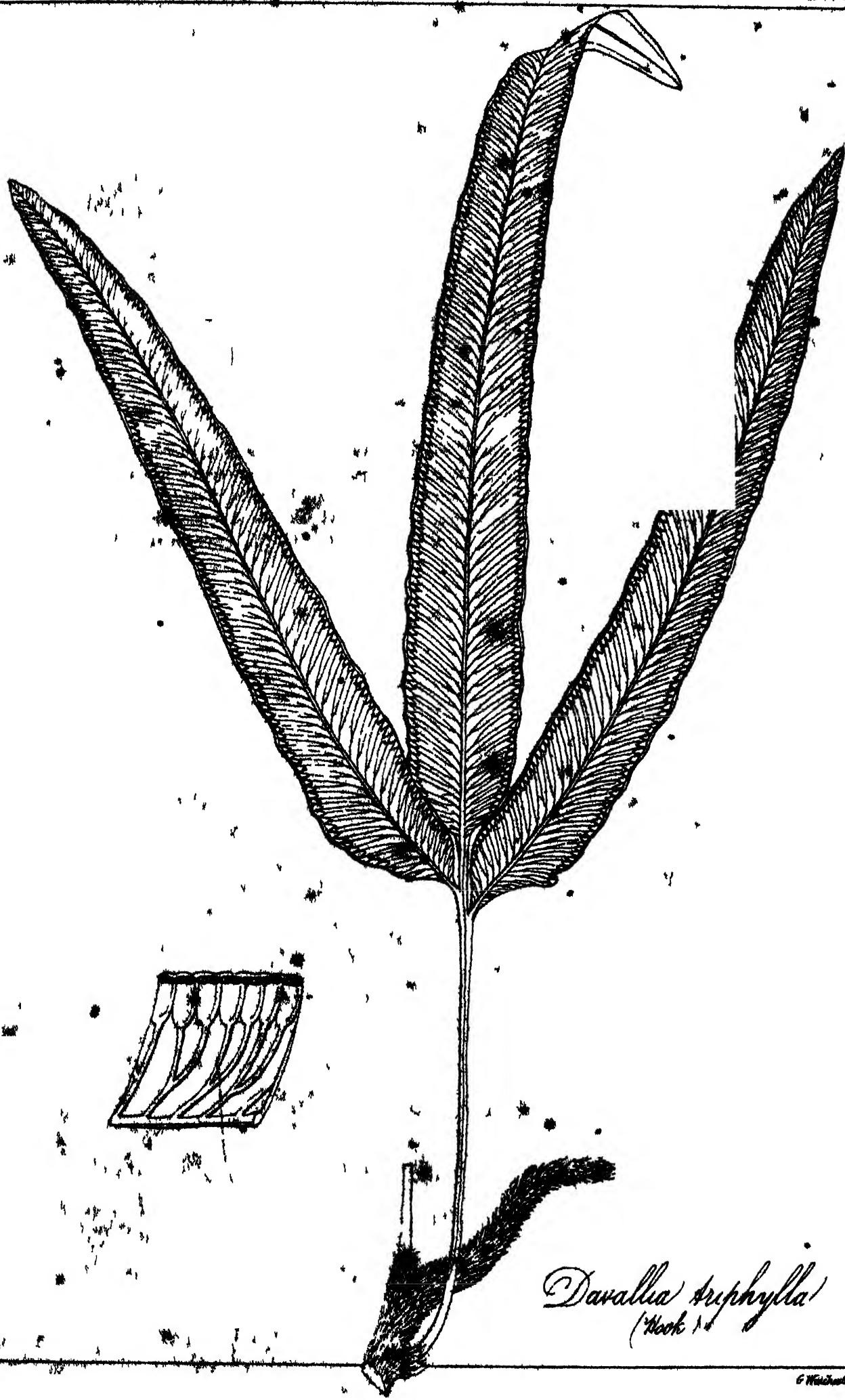
solida
(oh)

DAVALLIA

DAVALLIA TRIPHYLIA (Hook) Caudex stout creeping covered with chaffy scales fronds coriaceous small ternate, pinnae oblong lanceolate, obtuse cuneate at the base, in fertile plants more elongated, all of them entire intermediate ones petiolate, lateral ones shorter sessile oblique at the base veins horizontally patent copious crowded parallel thickened flat (not prominent) involucres semicylindrical compressed crowded so as to form an uninterrupted marginal line the whole length of the pinnae
 Hook S. Pl. 162 — *Stenolobus pentaphyllus* J Sm En Pl Phillip l c — (not *Davallia pentaphylla* B?)

Hab Singapore

DATE No CV



Davallia trichophylla
(Brook)

DAVALLIA

DAVALLIA GRIFFITHIANA (Hook) Caudex long stout creeping clothed with copious pale coloured shaggy fimbriato pilose scales frond deltoido ovate sub coriaceous tripinnate pinnae acuminate pinnales oblong lanceolate petiolulate obtuse, obliquely cuneate at the base pinnatifid lower ones again pinnate lobes short obtuse or retuse almost obsolete on the lower margin, involucres flat orbiculate, the upper half free placed at a distance from the apex of the lobules and chiefly upon those of the superior margin rachides (except the primary ones) winged stipes elongated — β more coriaceous with a faint appearance of striae or pseudo veins — *Hook Sp Fil* 1 168

The figure is taken from Sir W Hooker's Species Filicum

Hab Khasya, Assam

PLATE No CVI



Davallia Griffithiana
(Hook.)

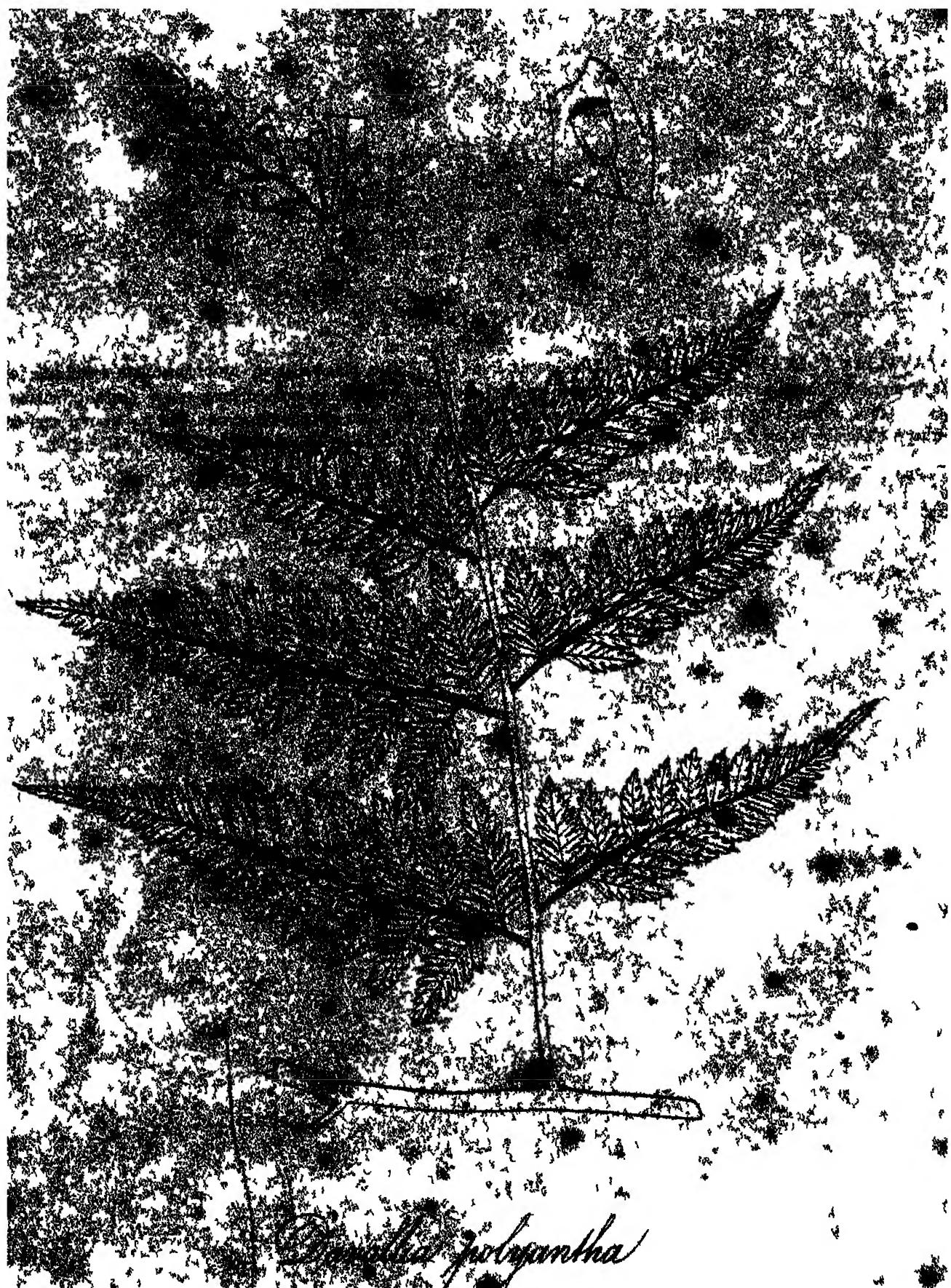
DAVALLIA

DAVALLIA POLYANTHA (Hook) Tall coriaceous, frond 3 4 pinnate pinnae distant, ovato-lanceolate acuminate, lower pinnules deeply pinnatifid almost to the rachis petiolate upper ones and the segments of the pinnules oblong rather acute, ultimate ones decurrent, so as to form a winged rachis all of them crenato serrate veins pinnated no sori, each lobule bearing an oval truncated involucre rather considerably below the apex with a very short erect tooth on the outside (often obsolete) — *Hook Sp Fil* 1 168

The figure is taken from Sir W Hooker's *Species Filicum*

Hab, Singapore

PLATE No CVII



polyantha

POLYPODINEÆ

B Receptacles effuse occupying a crowded mass of reticulated veinlets forming large amorphous portions or separate lobes of the fronds or sometimes definite in form

PLATYCERIEÆ

PLATYCERIUM, (*Desvaux Ann Soc Lin Par* v 213)

(*Neuroplatyceros Plukenet* *Fee* — *Alcicormium Gaudichaud* — *Scutigera, Fee* — *Platyceria, Fee* — *Acrostichum* *Sp*, *Auct*)

Sori superficial, non indusiate, the *receptacles* (a series of crowded anastomosing veins), occupying the under-surface of separate lobes or large amorphous portions of the fertile fronds. *Veins* furcate, free, or here and there anastomosing, *venules* anastomosing in large trapezoid or sub hexagonal elongated areoles, the veinlets free, divaricate or hamate within the areoles.

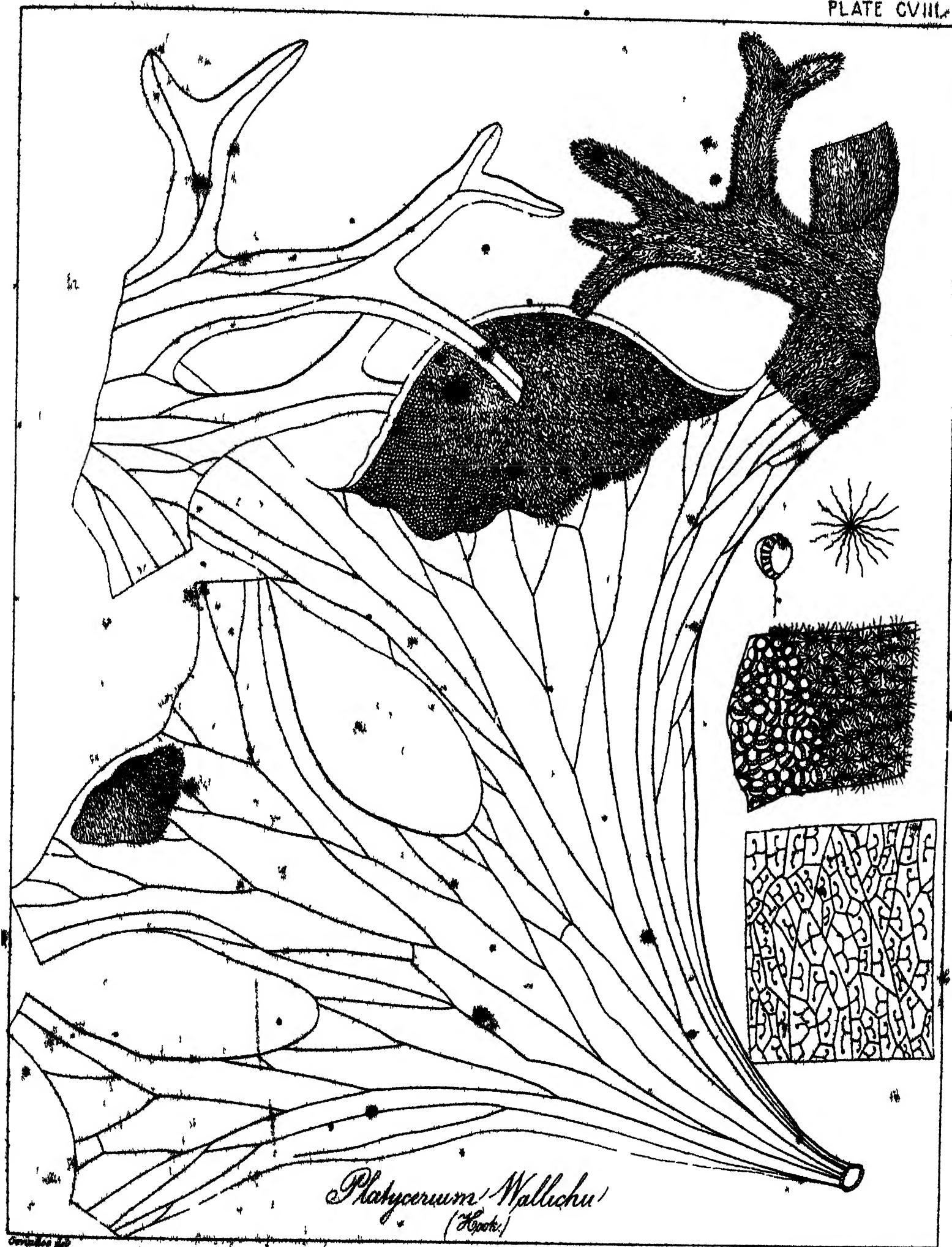
Fronds heteromorphous, coriaceous, pinnatifid or lobate clothed with stellate hairs the fertile ones articulate Rhizome sub globose. A very distinct group. The primary veins rarely unite while the secondary ones are compoundingly anastomosed — (Moore)

PLATYCERIUM WALLICHII (Hook) Fronds ample bifarious, at length glabrous, sterile ones imbricated below irregularly sinuato lobate above elongated dilated deeply and much dichotomously pinnatifid. Segments patent; inflexed. *Fertile* fronds geminate very broadly flabellato cuneate twice-dichotomous suddenly narrowed at the base each primary division or segment bears a sorus on the disk (hence there are two sori on each frond), which is semi circular and very much produced in the sinus itself the terminal segments beyond the soriferous disk are several times dichotomous and pendent, primary veins dichotomous, parallel elevated here and there anastomosing into broad elongated areoles which are occupied by lesser ones with numerous free branched included veinlets — Hook *Sp Fil* v 284 — Hook in *Gard Chron* for Oct 1808 p 765 and in *Phil Exot* t 97 — *Acrostichum alucone* Wall Cat n 19 (not Linn)

The specimen figured is from Moulmein — (1 arish)

Hab Moulmein banks of Irawaddy, and river Martaban Malacca, Peninsula

PLATE No CVIII



Platycerium Wallichii
(Hook.)

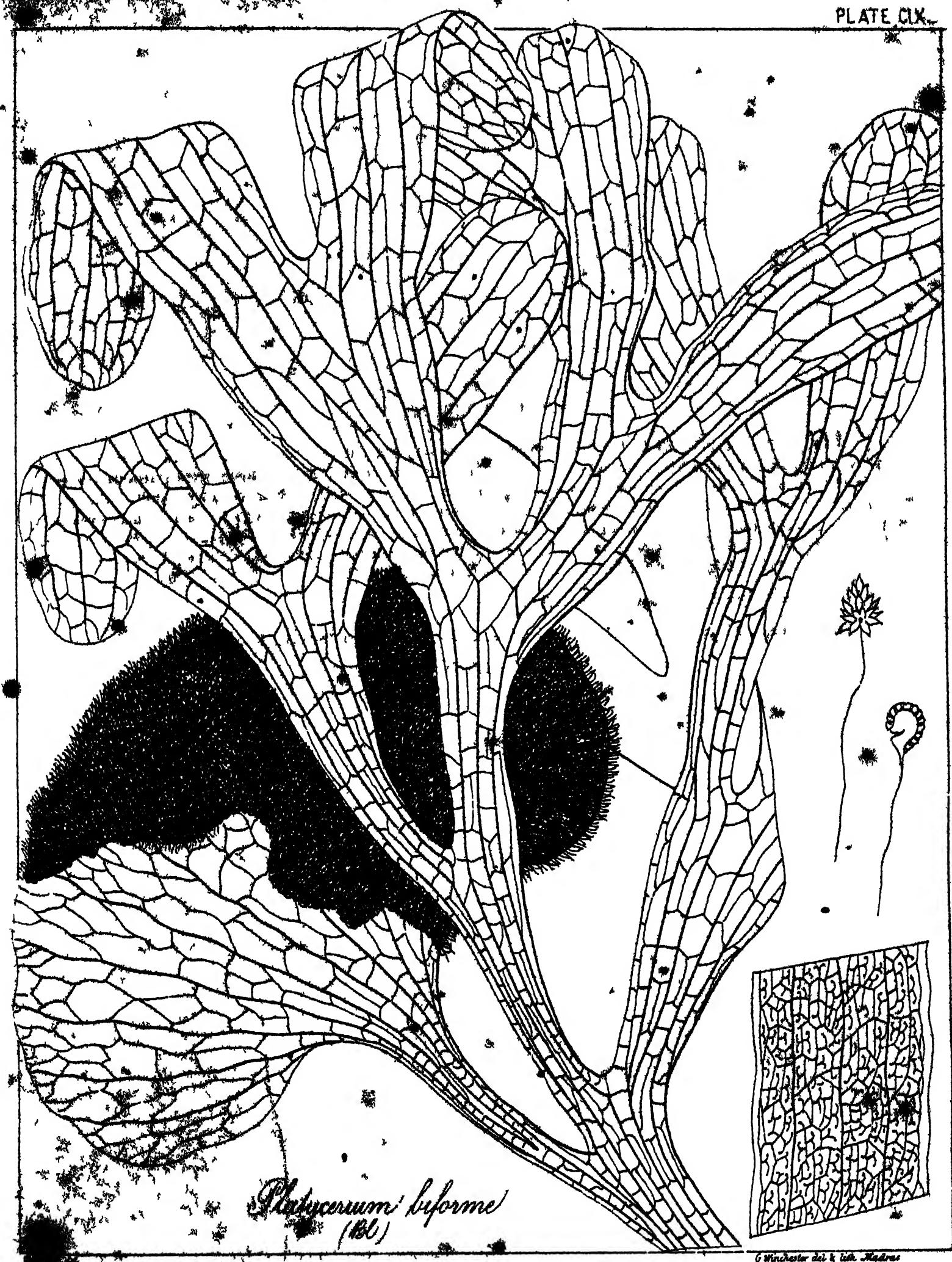
PLATYCERIUM

PLATYCERIUM BIFORME (Bl) Fronds ample bifarious at length glabrous sterile ones imbricated very thick and corky towards the base subrotund but very varied in circumscription lobed and sinuated at the margin, coarsely reticulato venose fertile fronds (geminate ?) rather long—stipitate of great size 5 6 and more feet long!—from a subcuneate base repeatedly dichotomous the segments loriform flaccid and pendent fertile segments quite different from the rest forming a large reniform stipitate shield like receptacle 6 8 inches or more in diameter wholly soriferous beneath except at the margin—*Hook Sp Fil v 285 Bl Fil Jav p 14 t 18 Pl J Sm Hook in Gard Chron for 1808, p 764*—*Neuroplatyceros Fee Acrost p 104*,—*Acrostichum, Sw Syn Fil p 112*, *Willd Sp Pl v p 111*—*A fuciforme, Wall Cat n 20*—*Platycerium coronarium, Des*.

The specimen figured is from Java (Calcutta Herb.)

Hab Burmah, Mergui, Singapore Malay Peninsula and Islands Java, Borneo, Philippine Islands

PLATE No CIX



Platycerium bifurcatum
(Bl.)

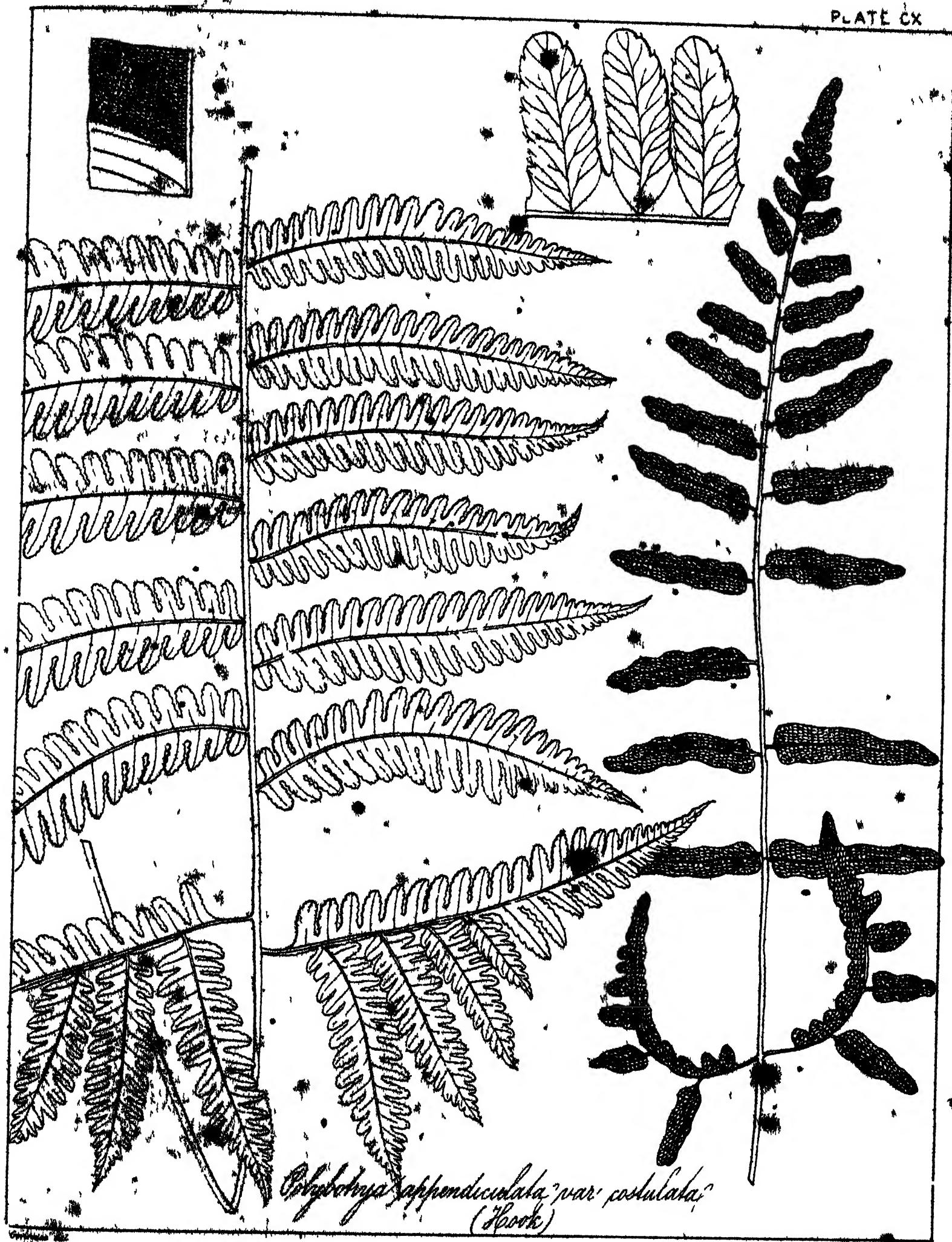
POLYBOTRYA (See "Ferns of Southern India" p 66)

POLYBOTRYA APPENDICULATA *var. "β costulata" (Hook.)* Sterile pinnae deeply pinnatifid $\frac{1}{2}$ to $\frac{2}{3}$ of the way to the rachis costulate with simple patent veins lowest pair of pinnae half deltoid, bi pinnate at the base, pinnules $1\frac{1}{2}$ to $3\frac{1}{2}$ inches long deeply pinnatifid like the primary pinnae fertile pinnae also with the lower pair in like manner pinnated as in the sterile fronds —(Hook.)

The specimen figured is from Moulmein from Mr Parish who informs me that he considers it quite distinct as a species from *B appendiculata* of which however Sir W Hooker considers it a variety only—it is a beautifully delicate plant

Hab Moulmein

PLATE No CX

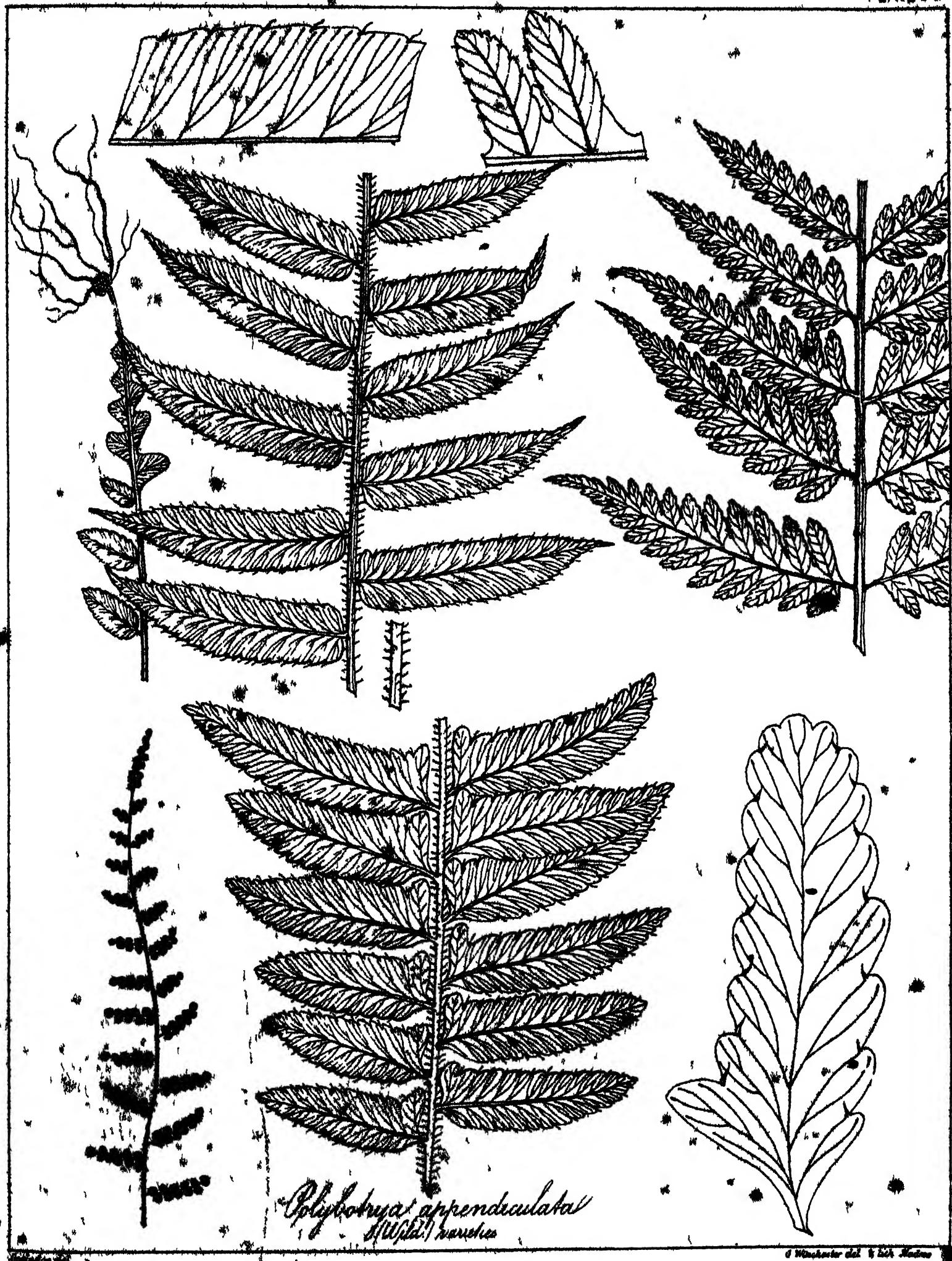


POLYBOTRYA

POLYBOTRYA APPENDICULATA (Wild) (See "Ferns of Southern India" p 66)

The plate contains figures of 3 different varieties of this species, all received from Moulmein, from Mr Parish. The second supposed species common in India and published in Plate CXCV of "The Ferns of Southern India" under the name of *P. asplenifolia* (Bory) must, I am afraid, be looked upon only as a variety of *appendiculata*.

PLATE No CXI



PÆCILOPTERIS (See "Ferns of Southern India," p 68)

PÆCILOPTERIS FLAGFLLIFERA (Wall) Caudex creeping, paleaceous thick as a goose quill stipites a span to a foot and more long (longer of the fertile frond) scaly at the base fronds firm membranaceous a span to 1 2 feet long pinnate pinnae commonly 3 5, rarely more sterile pinnae 3 5 inches long 1 1/2 inches wide subelliptical or oblongo lanceolate lateral ones rather suddenly acuminate entire or sinuate crenate subcuneate at the base and petiolate terminal one similar to these but larger and petiolate or more generally very much elongate and caudate a foot or 1 1/2 feet long ! rooting and proliferous at the apex, venation manifest costules rather wide apart veins anastomozing always forming a series, of oblong large areoles close to the costa and costules, nearly uniform in size and shape the rest of the areoles very irregular and with or without free included simple veinlets fertile pinnae much smaller 2 3 inches long, oblong obtuse occasionally the cauda of the terminal sterile pinnae becomes fertile, and the lateral sterile pinnae partially soriferous the capsules in that case chiefly confined to the costules and near to the margin —*Hook Sp Fil* v 258 —*Hook and Grev Ic Fil* t 23 *Bl Fil Jav* p 104 t 13 *Cyrtogonium J Sm* —*A heterochlithum Pr* *Pæciliopteris Pr* —*Heteroneuron Fæ Aerost* p 92 —*Acrostichum diversifolium Bl Fil Jav* p 36 t 12 ? (sterile frond simple) —*Cyrtogonium J Sm* —*Heteroneuron Fæ Aerost* p 91 (excl syn —*Gymnopteris trilobata J Sm*) —*Pæciliopteris, Pr* *Rheede Hort Malab* x 11 t 11

The specimen figured is from Assam—(Dr Thomson)

Hab Nepal Assam Chittag ng Mouhnein Java Luzon, Malabar (if Sir W Hooker is correct in referring *Rheede Hort* Malab x 11 to this plant—but I have never detected it any where in Malabar)



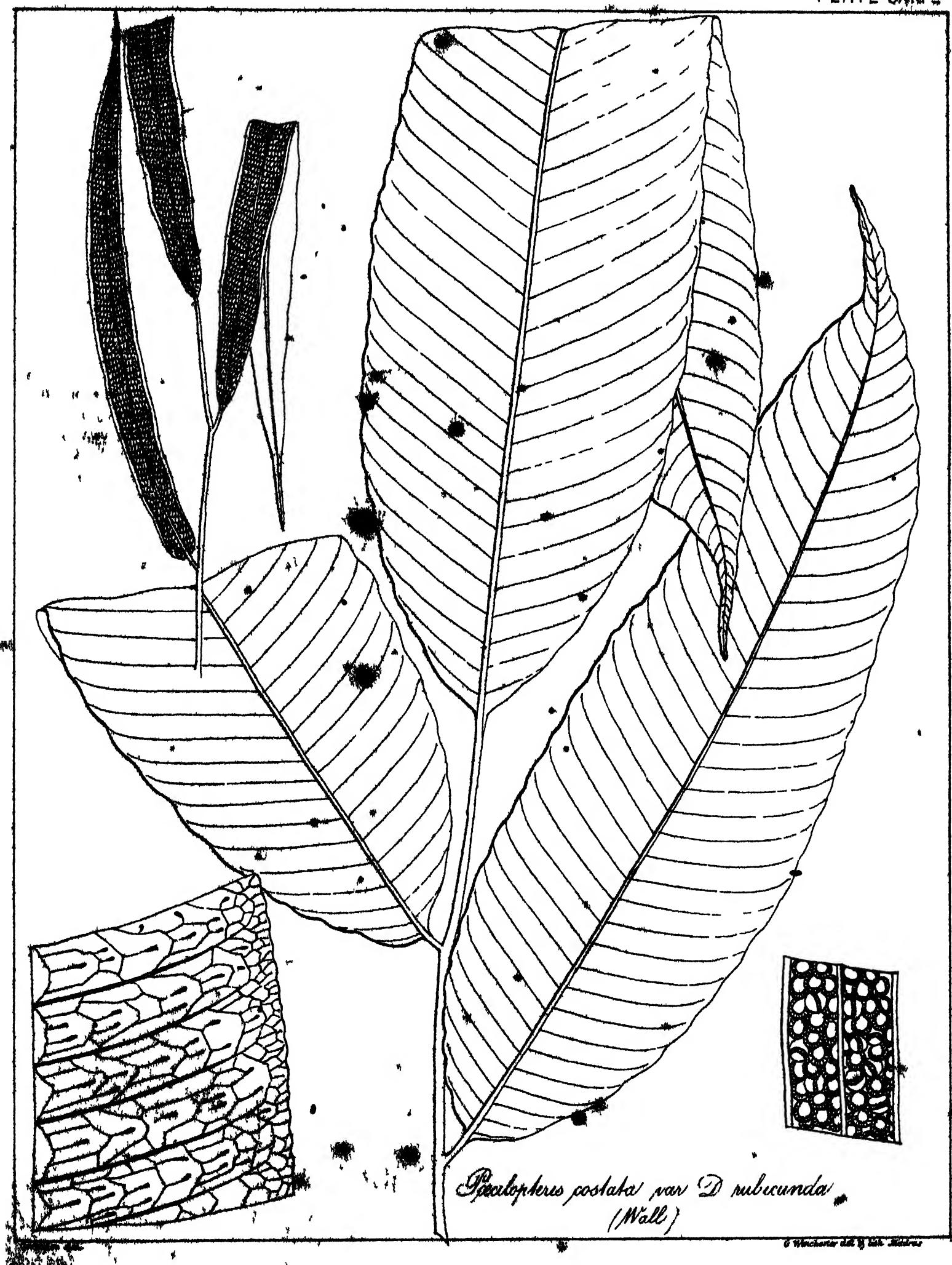
PÆCII OPTERIS COSTATA (Wall.) Caudex creeping, subulato paleaceous, stipites 1 1½ and more feet long, striated and often here and there rusty furfuraceous fronds 1 1½ or more feet long coriaceous or subcoriaceous membranaceous, very pale-green pinnate pinnae petiolate of the sterile frond 7 10 inches long, 1 2 inches broad oblong, acuminate obtusely and obliquely cuneate at the base entire sinuato crenate at the margin costules horizontal and costa prominent beneath primary veins arched and forming three or four or more series (according to the breadth of the pinnae) of very irregular but sub transverse large areoles within which are lesser deltoid areoles including two or more clavate free veinlets free veinlets also at the margin pinnae of the fertile fronds generally smaller, 2 3 6 inches long more coriaceous but nearly of the same form wholly or partially soriferous, the margin sometimes reflexed, costules very distinct and prominent beneath venation less compound *Hook Sp Fil v 262*

Var *a rubicunda* pinnae very large subcoriaceous often finely acuminate, 8 12 inches long frequently deeply tinged with purple-red wholly soriferous beneath fertile ones 6 9 inches long ½ an inch wide,—1 costatum, *Wall Cat n. 26*,—*Cyrtogonium*, *J Sm*,—*Pœciliopteris*, *Moore*—*Campilium P*,

The specimen figured is from Assam—(Dr Thomson)

Hab Nepal, Sylhet, Assam, Khasya, Kumaon, and Chittagong

PLATE No CXIII



PÆCILOPTERIS

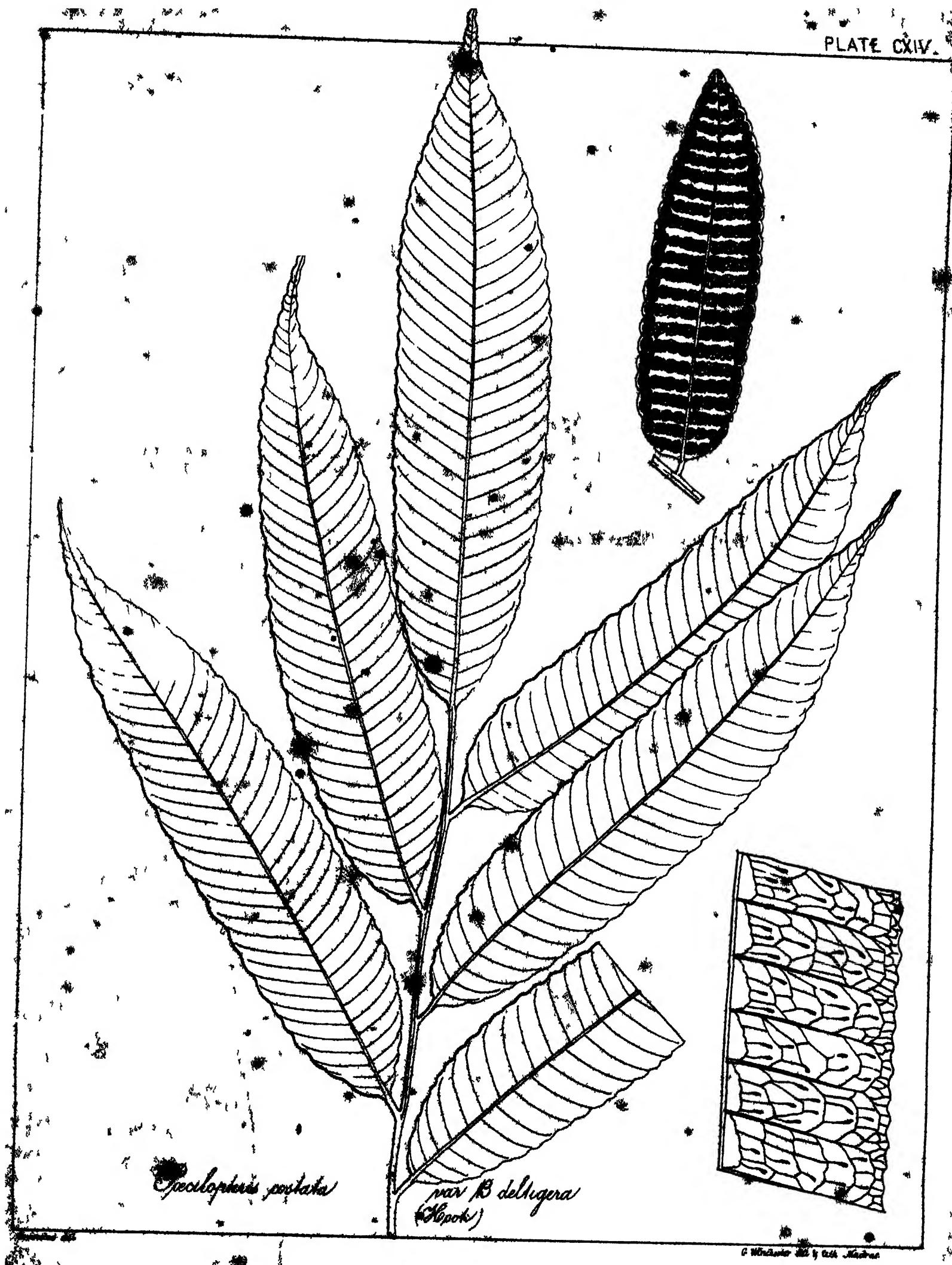
PÆCILOPTERIS COSTATA (See p 113)

*Var ^{**}β, DELTIGERUM* small sori partial generally marginal and interrupted spots or masses forming transverse lines between the costules, frequently having a deltoid form. *Hook Sp Pl v 262* —*Meniscium deltigerum Wall Cat n 9*

The specimen figured is from Birmah—(Captain Dormer)

Hab Nepal, Bhotan, Sikkim, Birmah

PLATE No CXIV •



PACILOPTERIS

PACILOPTERIS COSTATA (See p 113)

Tr. γ UNDULATA resembling var β but the sori frequently only marginal forming a broad band, but often extending a little way down between the costules towards the costa the disk of the pinule naked *Nothochlaena undulata* Wall Cat n 140 — *Jenkinsia H. C. Cen. I. d. t. 7a Moore* — *Campilium P.* — *Cyrtogonium f. Sm* — *Iomaniopsis, Metten* — *Heteroneuron sculpturatum* Lee cost p 95, t 56 *judging from the figure* — (Sori universal on the pinnae)

The specimen figured is from Moulmein — (Larish)

Hab Martaban, Moulmein, Khasya Sikkim

PLATE No CIV



Caloptilia costata var. *undulata*
(Zeller)

GYMNOPTERIS (See Ferns of Southern India, p 15)

GYMNOPTERIS MINUS (Metten) Small caudex creeping thick as a sparrow's quill scaly at the apex stipites remote slender 1 3 or in those of the fertile frond 4 inches long. *Sterile* fronds membranaceous 1 1/2-2 inches long oblong or broad—lanceolate costate tapering into a stipe 2 1/2 inches long costules indistinct areoles with a free included clavate veinlet smaller towards the margin. *fertile* fronds 2 inches long linear obtuse — *Hook Sp Fil v 277 Metten Fil Hort Lips p 20* — *Leptochilus, Fee Acrost p 87, t 47, f 2 according to his figure (excl Syn J Sm)* — *Gymnopteris Hook 2nd Cent of Ferns t 78*

The specimen figured is from Khasya—(Calcutta Herb.)

Hab Khasya near Churra, alt 2,000-3,000 feet Isle of Samar Philippines

PLATE No CXVI



Gymnothecium minus
(Mitt.)

TAENIOPSIS (See Fungi of Southern India p 18)

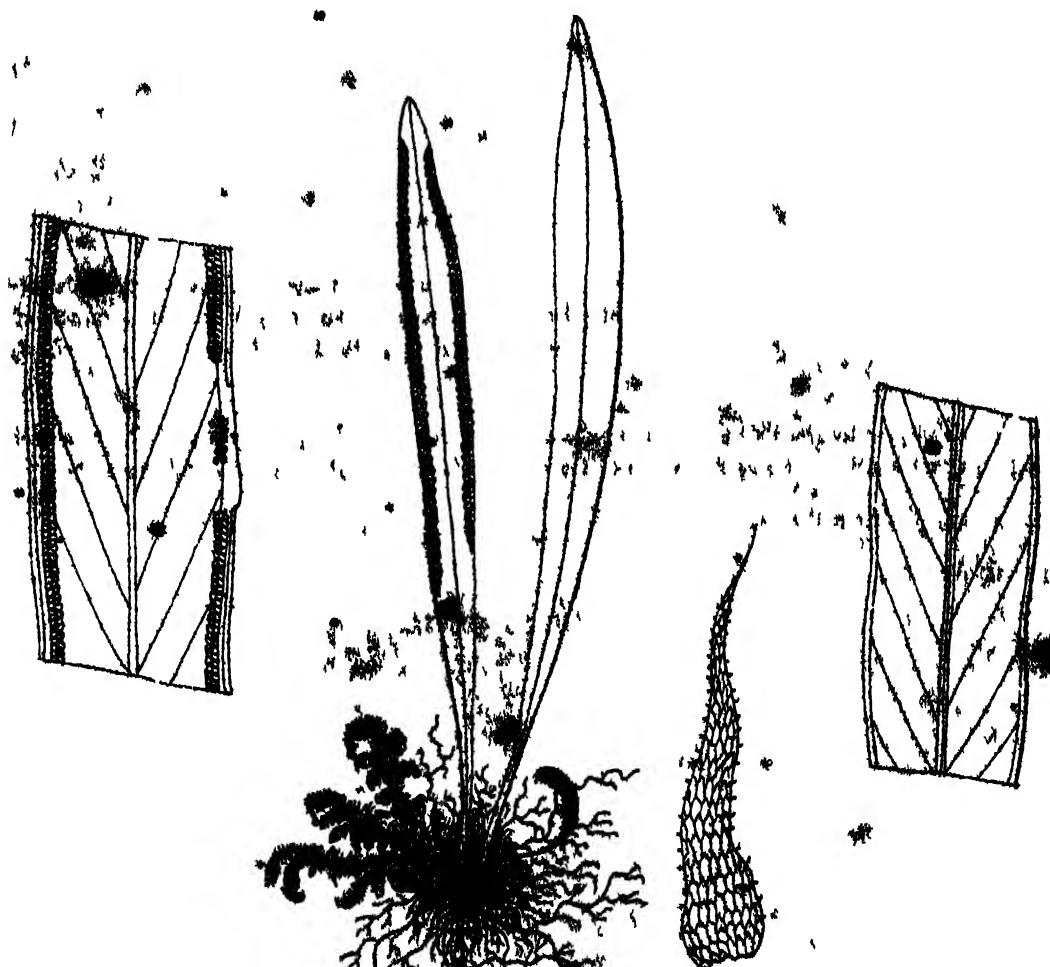
TAENIOPSIS AMBOINENSIS (Fee) Fronds smooth submembranaceous falcate acuminate tapering below into a petiole, costa slender, disappearing below the apex veins curved equal approximate sori closely marginal cuticle of the margin resembling a false involucre caudex flexuose contorted scaly scales cancellate rigidly toothed at the margin. —*Hook Sp Fil* v 177 Fee *Vittar* p 44 t 1 f 1

The veins are combined where fertile by an intra marginal vein which runs along the centre of the receptacle, I could not however make out from my solitary specimen if this vein is present where the frond or portion of the frond is sterile

The specimen figured is from Birmah—(Laurish)

Hab Birmah, Amboyna

PLATE No CXVII



Sennaropsis Ambonensis
(Gray)

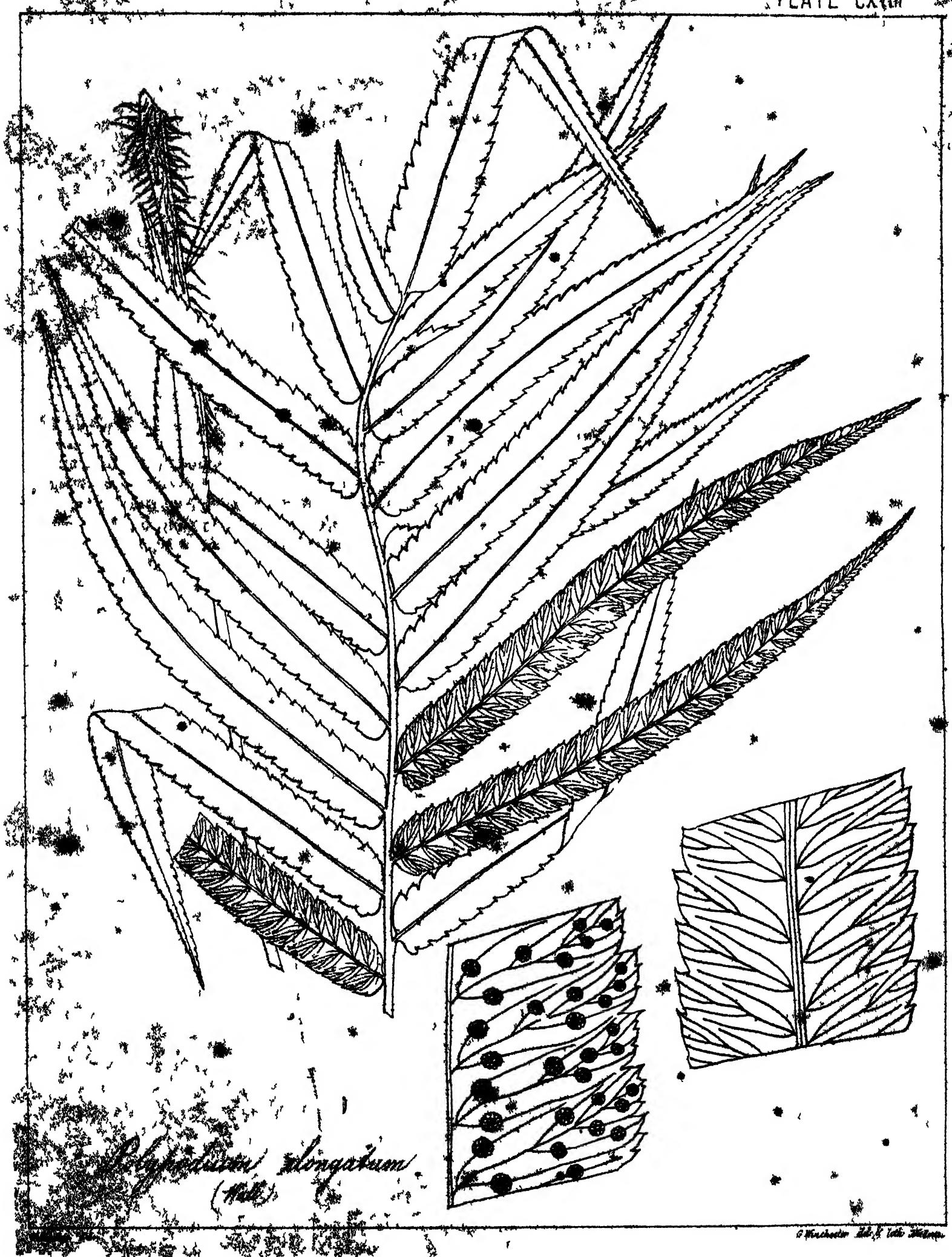
POLYPODIUM (See Icons of Southern India, p 10)

POLYPODIUM LLONGATUM (Wall) Caudex? stipes 1 1/4 foot and more long stout tawny brown very paleaceous below with dark castaneous glossy fulcato subulate long acuminate scales fronds ample 2 feet and more long 6 10 inches and more broad, thin firm coriaceous ovato oblong acuminate pinnated to the very apex pinnae numerous more or less patent and distant 5 10 inches long $\frac{1}{2}$ an inch broad subpetiolate from an obliquely cuneate but not dilated (rarely subauricled) base linear or elongato oblong finely acuminate the margin pinnatifid subduplicato serrated serratures subspinose terminal pinnae like the rest but more petiolate veins copious fasciculato pinnate veinlets each of them bearing a dorsal sorus and thus copious and irregularly scattered over the back of the frond or in irregular series Hook Sp Pl iv 234 Wall Cat n 309,—*Aspidium cuspidatum* Metten Aspid p 92

The specimen figured is from Khasya— (from the Ceylon Herb)

Hab Nepal, Khasya

ILLATL No CIVIII



Polypodium *dingatum*
(Willd.)

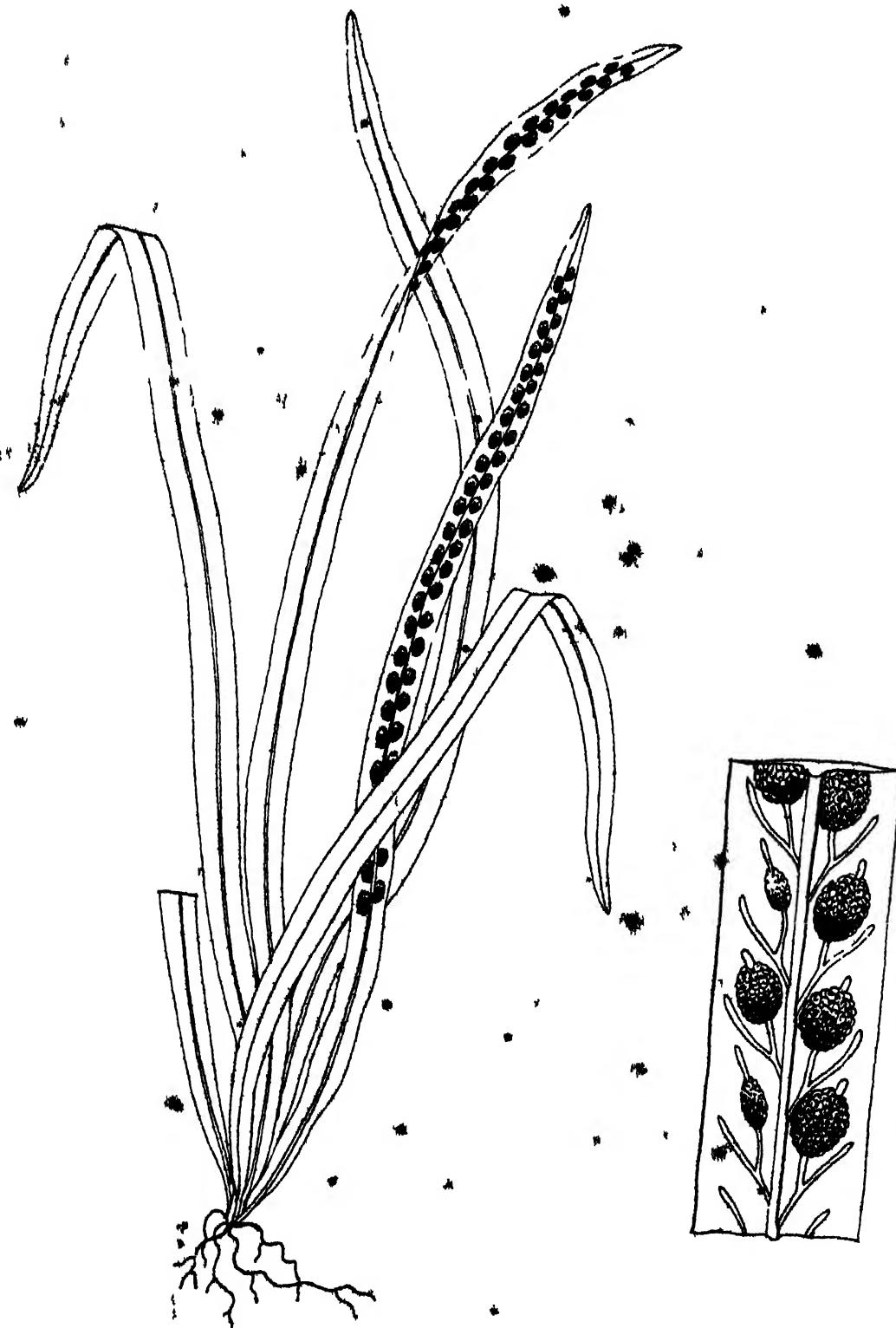
POLYPODIUM

POLYPODIUM SESSILIFOLIUM (Hook) Caudex small erect or ascending scaly stipites scarcely any fronds tufted membranaceous firm 3 8 9 inches long, 2 3 lines wide linear scarcely acuminate obtuse attenuated at the base veins oblique, approximate simple sori oblong parallel with the costa in lines or series intermediate between the costa and the margin Hook Fil iv 168

The figure is taken from Sir W Hooker's Sp Fil

Hab Penang Luzon, Java

PLATE No CXIX



Polypodium pseudolepium
(Kuhn)

NIPHOBOLUS (See "Feins of Southern India," p 61)

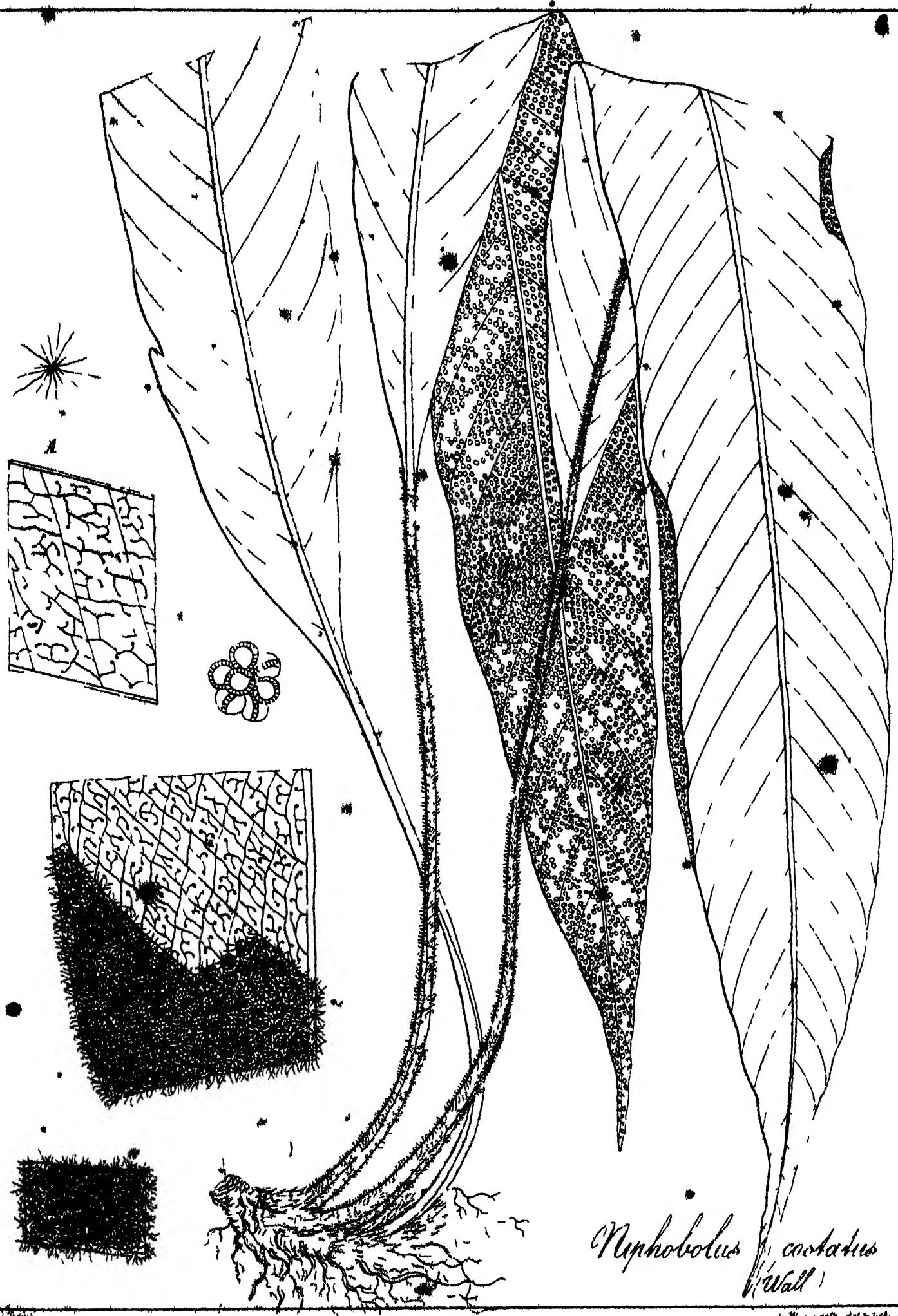
NIPHOBOLUS COSTATUS (Wall) Caudex creeping, rufu paleaceous with slender subulate scales stipites sub aggregate 1 inch to a span long angled, fronds a span to 1 1/2 feet and more long 1 2 3 inches and more broad firm (but not apparently carnosus)—coriaceous even sub membranaceous in age glabrous above beneath densely stellato tomentose and subsurfuraceous (tomentum forming a close coat) lanceolate or sub lanceolate acuminate gradually tapering below and decurrent upon the stipes, primary veins or costules distinct elevated on the under side sori immersed very minute and numerous arranged in compact closely placed lines or series between the costules and in equally compact series transversely with them. Hook Sp Fil v 50 Wall Cat p 265 Metten Polyp p 131 t 3 f 14 (venation) —Niphobolus Pr, —Apalophlebia, Ir Epim p 138, —Niphob venosus Bl Fil Jar p 63 t 28 (very good but small fronds) —Apalophlebia Pr Epim p 139

Figures 1 and 2 from Moulmein—(Parish)

Fig. A shows the venation (between the costules) considerably magnified

Hab. Nepal, Khasia, Assam, all along the Himalayas from Kumaon to Sikkim, Moulmein, Java, New Guinea

PLATE No CXX



Nephthytis contracta
(Wall.)

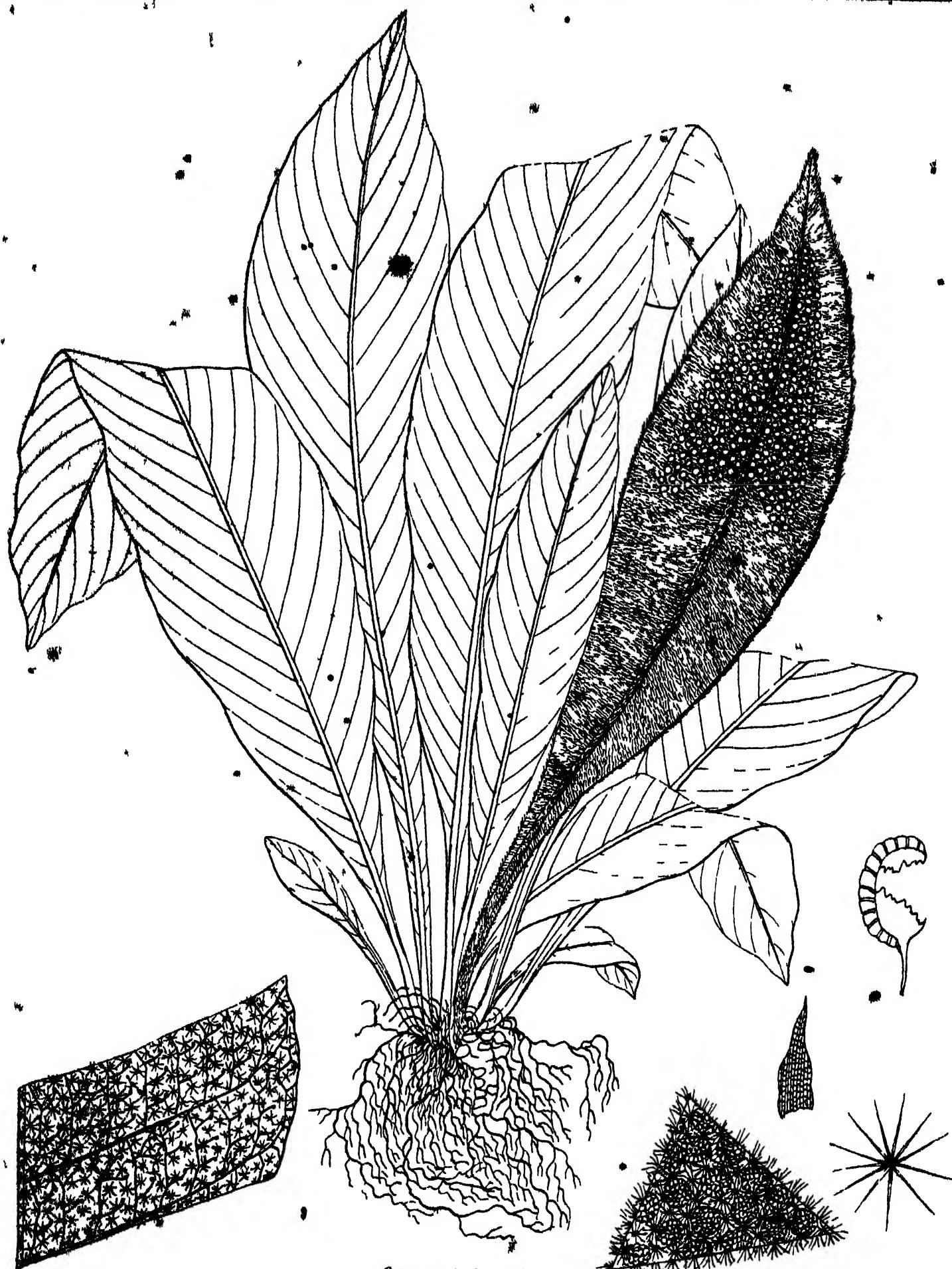
NIPHOBOLUS

NIPHOBOLUS PLANGIANUS (Hook) Caudex ? Stipes scarcely any fronds submembranaceous, 1½ foot and more long 2½ inch wide oblanceolate finely acuminate the base much and gradually attenuated sessile the margin irregularly sinuated glabrous above (at least in maturity) beneath thinly clothed with fuscous stellated hairs venation internal but manifest when viewed between the eye and the light costules not elevated areoles 16 18 between the costa and the margin including 2 to 4 simple or forked clavate soriferous veinlets sori prominent (not sunk) forming a broad mass in the disk of the upper half of the frond arranged with great regularity in four longitudinal series parallel with the costules and within each areole are transverse line each of four sori capsules mixed with long stipitate peltate stellated scales Hook Sp Fil v 52 Hook Ic Pl t 203 Gen Pl 83 *Polycairium*, P.

The specimen figured is from Birmah—(Parish)

Hab Birmah Penang

PLATE No CXXI



Nephrolepis Penangiana
(Mooh)

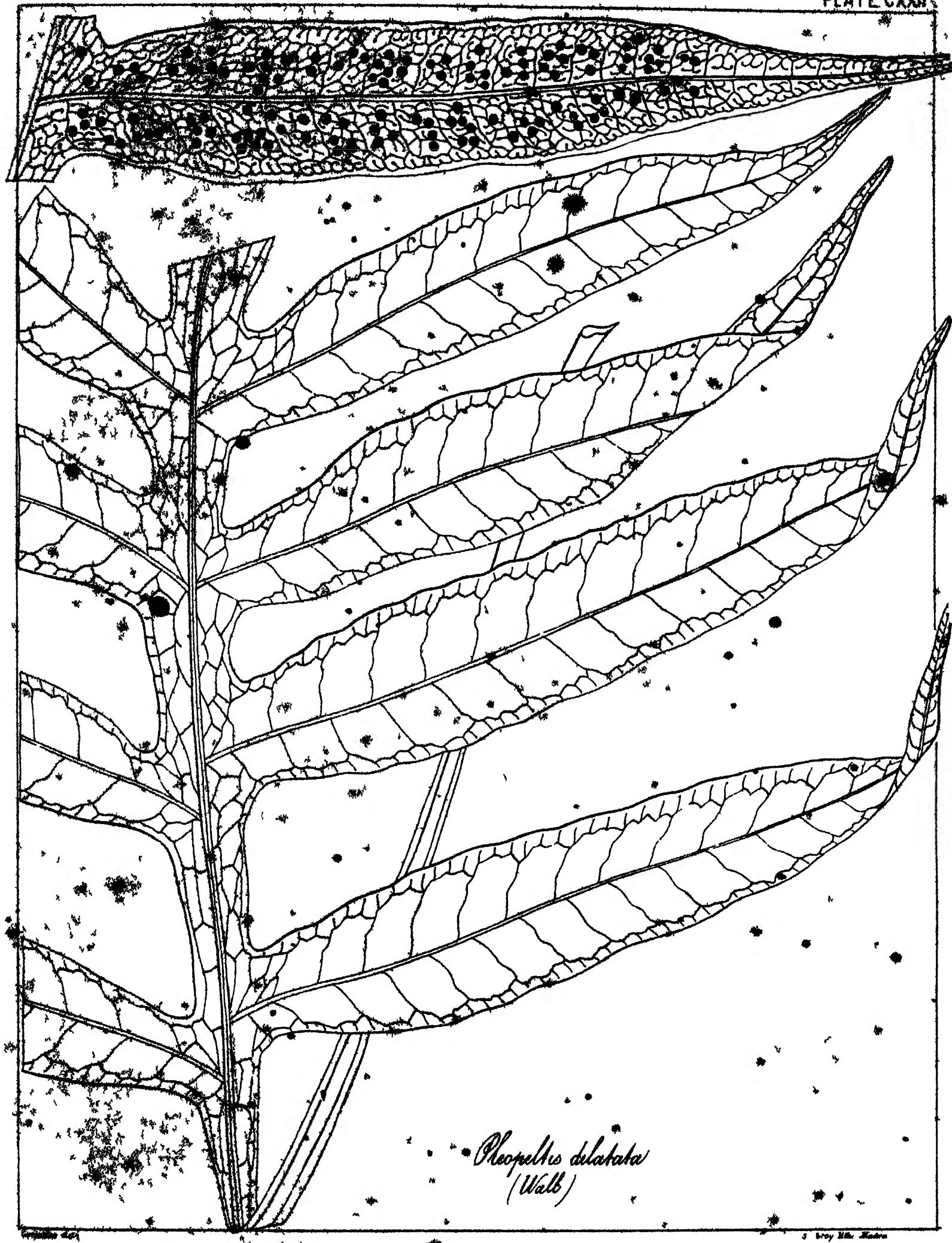
PLEOPELTIS (See 'Ferns of Southern India,' p. 57)

PLEOPELTIS DILATATA (Wall) Caudex creeping (short?) paleaceous with ovate reticulated scales, stipites 1½ foot and more long but strongly winged for its whole length by the decurrent base of the frond (not articulated on the caudex), fronds ample 1½ and 3 feet long a foot and more wide membranaceous light green glabrous oblongo ovate pinnatifid to within 1 inch of the rachis (less towards the base) segments 5 6 or 8 inches long (shorter towards the apex), ½ 1 rarely 2 inches wide, oblongo lanceolate acuminate entire suddenly decurrent costules veniform forming large primary areoles which extend two thirds of the way to the margin and include the sori these and the rest of the segments are occupied by lesser irregular areoles including many free veinlets their branches moderately divergating sori numerous very small often oval or more or less elongated compital on the secondary veins and veinlets *Hool Sp Hil v 8o Wall Cat n 29*, —*Dynania acuminata* *Brack Fil U S Frjl Eap*, p. 47

The specimen figured is from Moulmein—(Parish)

Hab. Nepal, Khasya, 1000 6000 feet Malacca, Malay Peninsula Moulmein ascent of Moolnit alt 1000 feet Samoa Navigator's Islands

PLATE No. CXII



Phegopteris dilatata
(Wall)

PLEOPELTIS

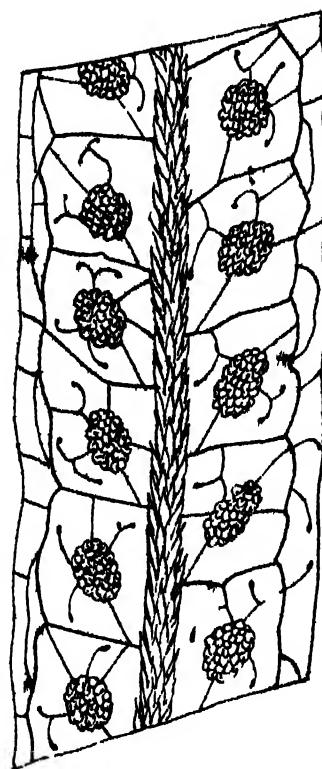
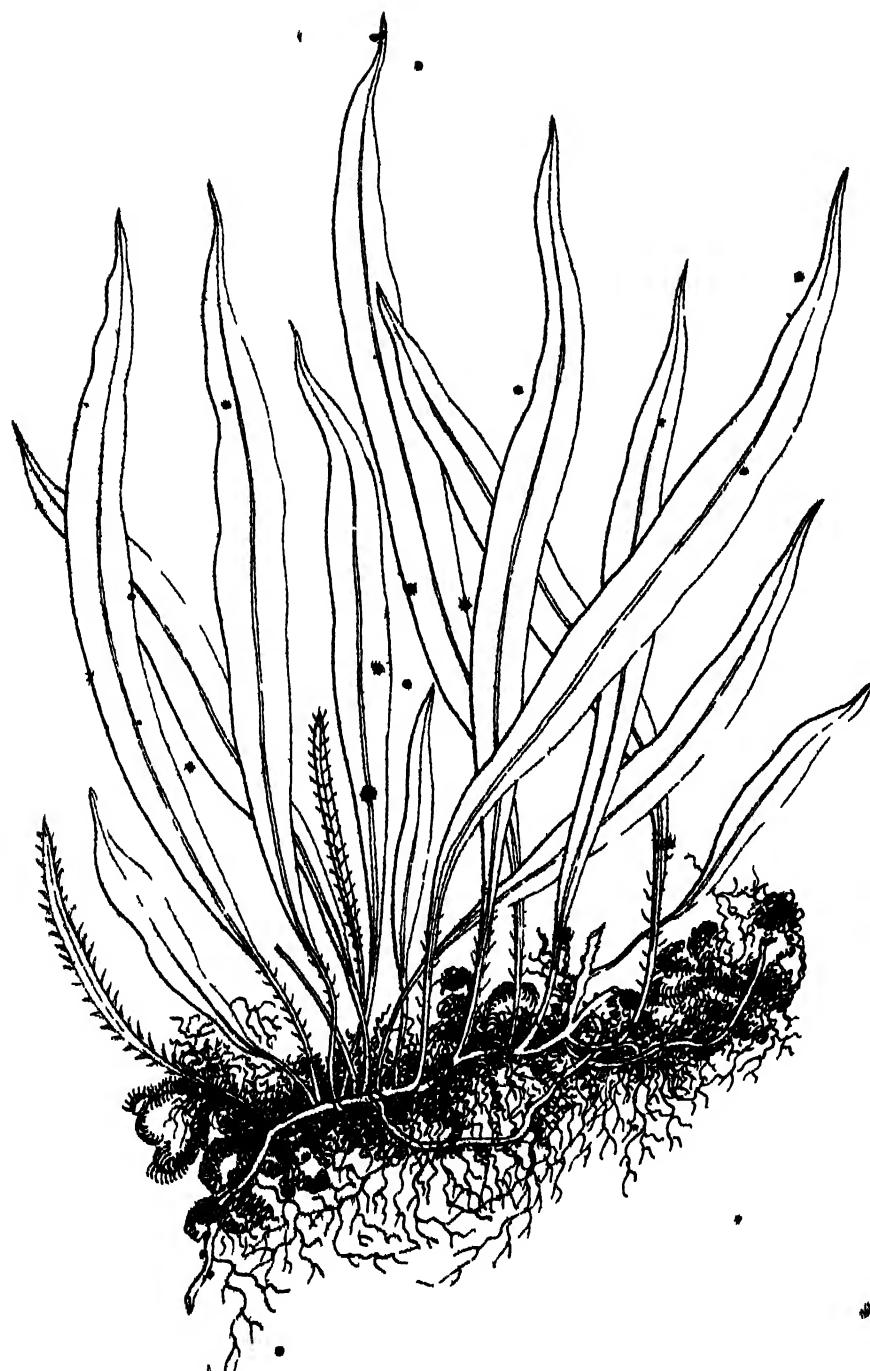
PLEOPELTIS ZOSTERIFORMIS (Wall) Caudex short fragile black creeping apparently under ground or rather under water scaleless stipites very slender weak and filiform 1 inch long aggregated fronds 4 6 inches long less than $\frac{1}{2}$ of an inch wide carnosum membranaceous black when dry linear vittatoid scarcely acuminate subacute entire gradually long-attenuated below into the thread like stipes costa prominent beneath and scaly with blackish appressed somewhat fleshy small ovate scales venation very distinct when seen between the eye and the light, costules none veins anastomosing so as to form 2 3 series of large parallel but very irregular areoles with no free veinlets Sori in a single but irregular series between the costa and the margin capsules lax *Hool Sp Fil v 6*, Wall Cat n 280 *Mettler Polyp p 86 (venation)*

Nearly allied to *P. tridactylon* Wall at least to the Southern Indian form

The specimen figured is from Burmah—(Parish)

Hub Burmah

ILLATE No CXXIII



Neopeltis zosteriformis
"Wall"

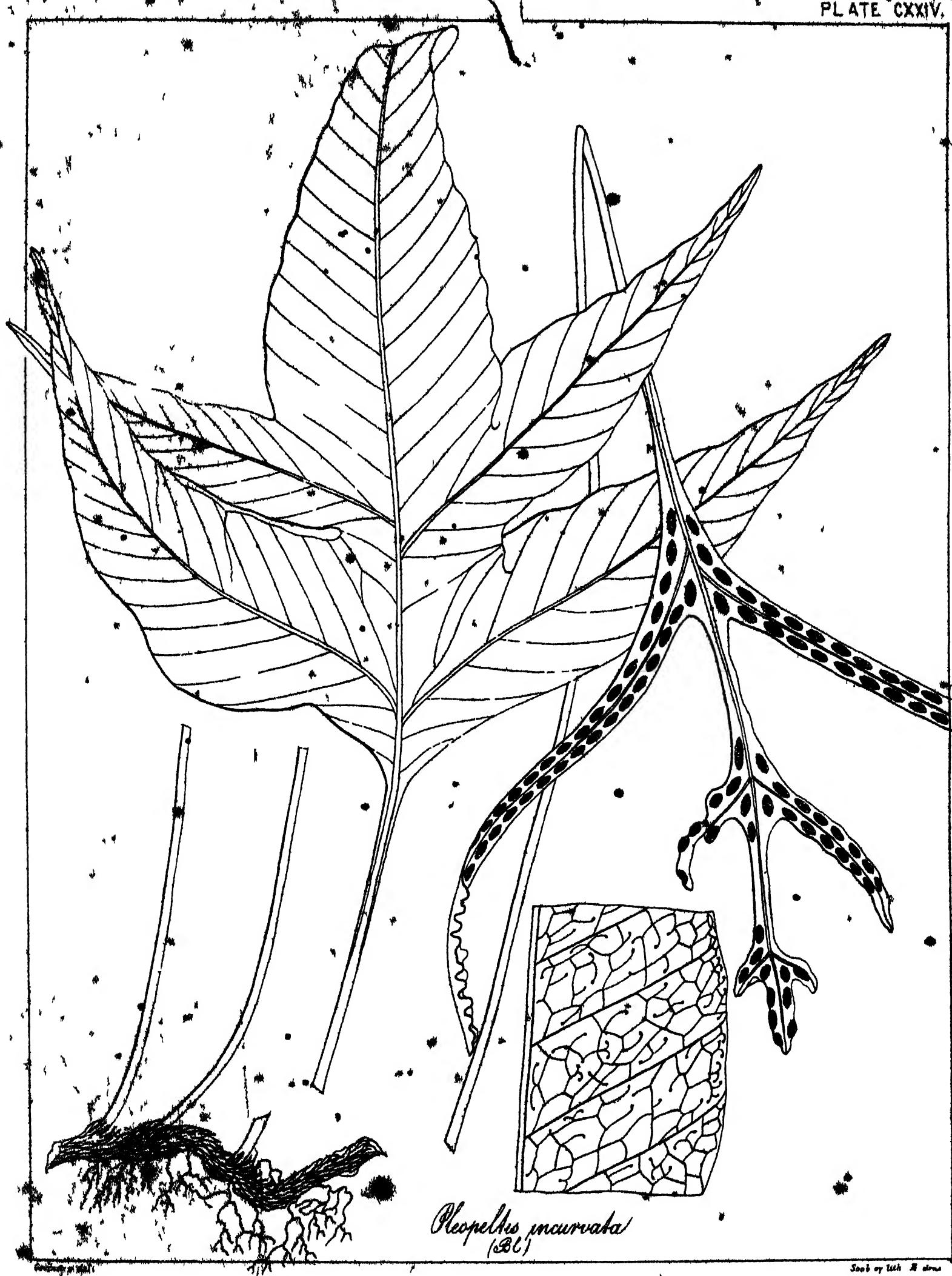
PLFOPPLTIS

PLEOPELTIS INCURVATA (Bl) Caudex creeping paleaceous, stipites scattered a span to a foot long of the *sterile* frond 2 feet of the *fertile* glossy brown fronds firm coriaceous glossy dimorphous *sterile* ones 6-10 inches long 8 inches to 1 foot wide hastato, tripartite simply ovate or pinnatifid with 4-6 lateral lobes lobes ovato acuminate entire horizontal terminal one very large, all thickened at the margin costules distinct but immersed, venation internal and very indistinct *fertile* fronds very long stipitate 10 inches to a foot long, nearly as much wide very broad ovate deeply pinnatifid nearly to the rachis below subpinnate segments 5-15 4-8 inches long very remote linear and acuminate decurrent at the base sori large copious oval sunk into a very deep cavity which forms a circular elevated truncated tubercle on the opposite side occupying the space between the costa and the margin in a single series *Hook Sp Fil v 77 Bl Fil Jav p 151, t 65 Metten Polyp p 106, t 1, f 30 (venation)*

The specimen figured is from the Calcutta Herbarium

Hab Mount Ophir, Malacca, Java

PLATE No CXXIV



Pleopeltis incurvata
(Bl.)

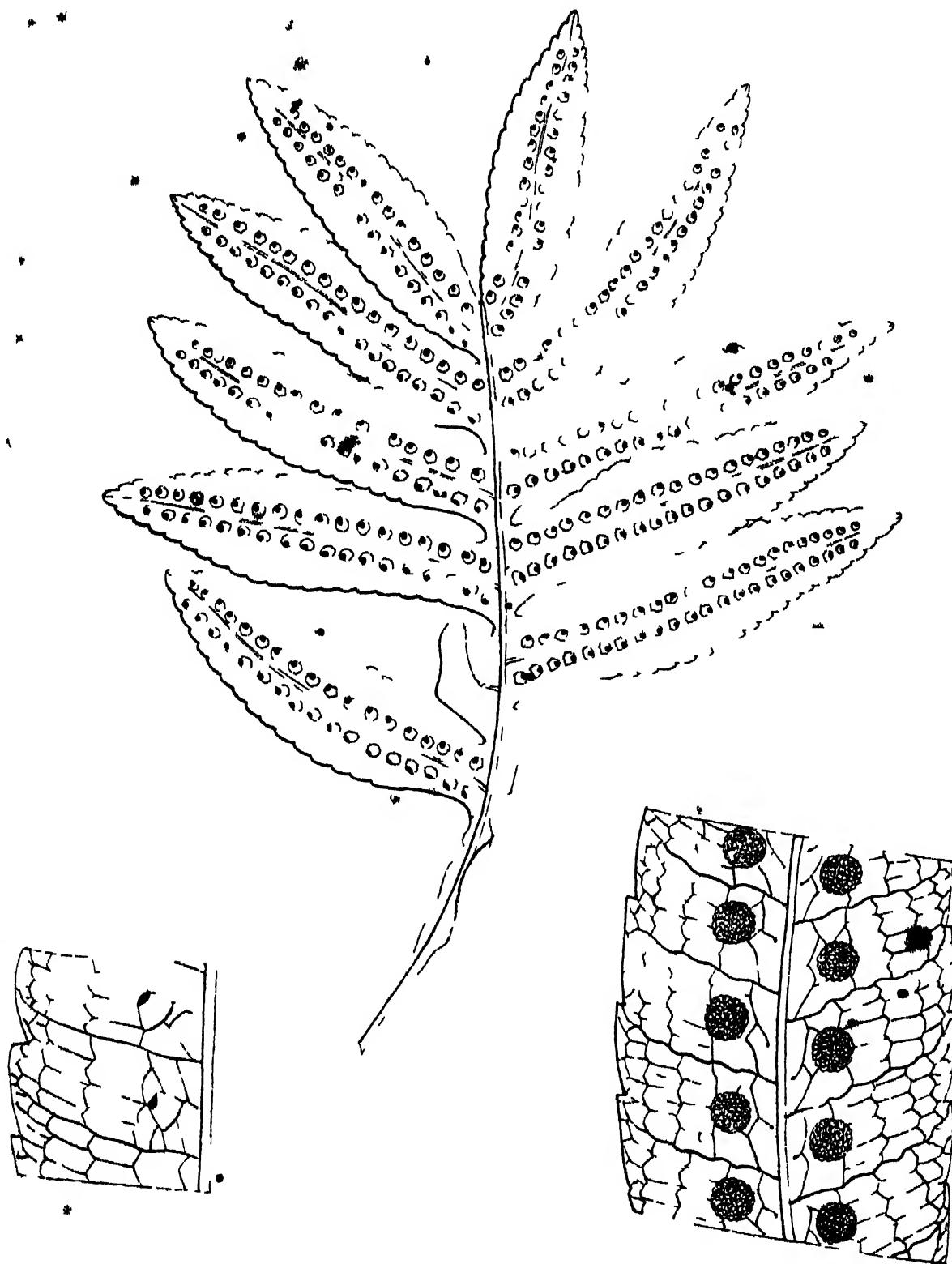
PLEOPELTIS

PLEOPELTIS PARISHII (Bedd.) Grudex ? Stipites short and more or less winged with the decurrent base of the frond fronds coriaceous membranaceous glabrous very broadly ovate deeply pinnatifid segments obtuse undulated on the margin and distantly crenated venation very prominent costules slightly thicker than the veins which latter form 4 or 5 areoles between the costa and margin veinlets forming a very regular series of lesser parallelogrammoid areoles with rarely a few free + inlet; Sili in a single series in the second areole from the costa deeply sunk and forming a prominent pustule on the upper surface

The specimen figured is from Moulmein—(Parish)

Hab Moulmein

PLATE No CXXV



Stegelia Parvula
- Detail

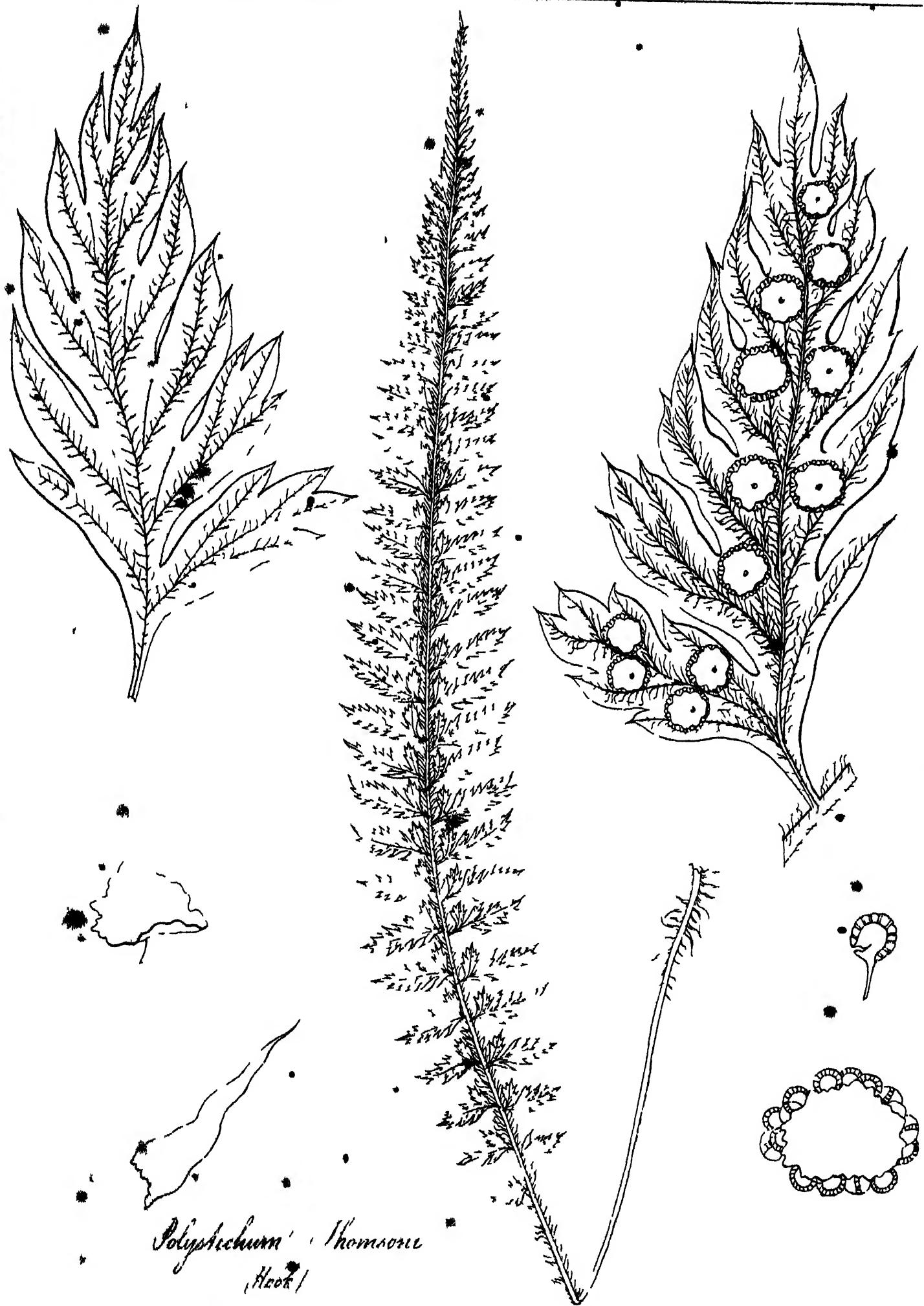
POLYSTICHUM (See "Ferns of Southern India" p 41)

POLYSTICHUM THOMSONI (Hepok) Caudex short thick scaly stipites tufted 1 3 4 inches long paleaceous with large scales fronds 6 8 inches long lanceolate acuminate chartaceous membranaceous pinnate pinnæ sub sessile 1 to 1 inches long deltoid ovate or semi ovate acute subauricled and deeply pinnatifid (especially at the superior margin) lobes small ovate inciso serrate teeth setoso spinulose sori solitary on each lobe involucrum subovate membranaceous peltate pedicellate the margin suberose Hook Sp Fil iv 7 Hook 2nd Cent of Ferns t 2.

The specimen figured is from Sikkim—(Dr Thomson)

Hab Sikkim, Himalaya, Kumaon, elev 9 to 13,000 feet Simla

PLATE No CXVI



POLYSTICHUM

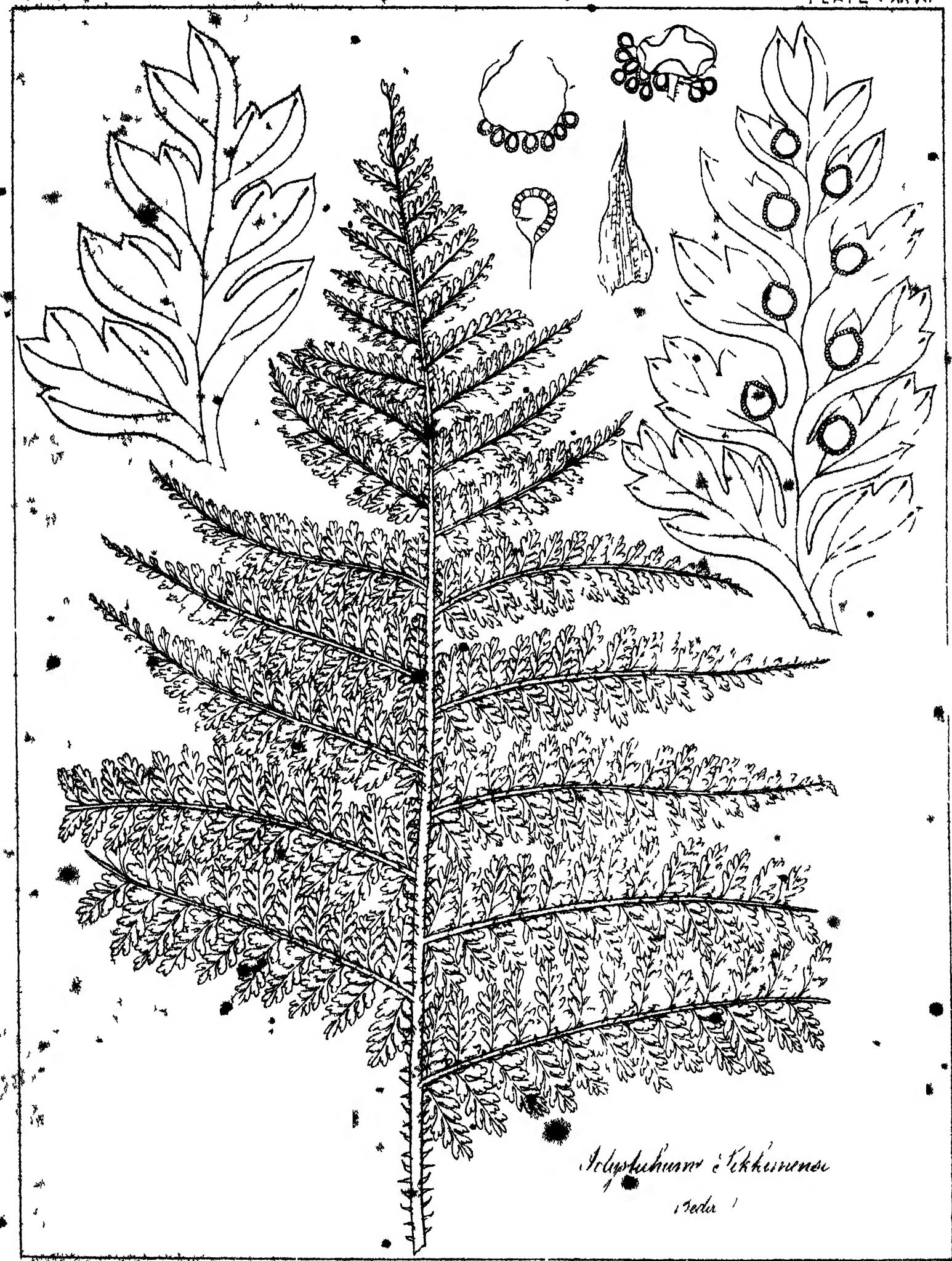
POLYSTICHUM SIKKIMENSE (Lodd) Caudex? Stipes and rachises rather copiously furnished with persistent scales fronds ovate acuminate subcoriaceous membranaceous tripinnate primary pinnae 4 6 inches long, oblong acuminate pinnules oblong deeply pinnatifid $\frac{1}{2}$ an inch to 1 inch long secondary pinnules variously pinnatifid with the segments acuminate and falcate costa of the pinnules waved veins simple or forked terminating within the margin sori generally one to each segment involucres sub orbicular peltate stalked with the stalk below the centre

The specimen figured is from Sikkim—(Dr Thomson)

Hab Sikkim, Himalaya

I forwarded specimens of this fern lately to Sir W Hooker who pronounced it to be an undescribed species and informed me that he intended publishing it in his synopsis under the name of *Nephrodium (L) Thomsoni*—the involucres however in specimens which I received from Dr Thomson and in others lately collected by Dr Anderson are always those of *Polystichum*, and not *Lastrea* and there is already a *Polystichum Thomsoni*

PLATE No CXXVII



Polystichum cikkimense
Seda

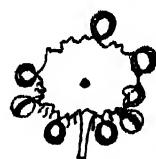
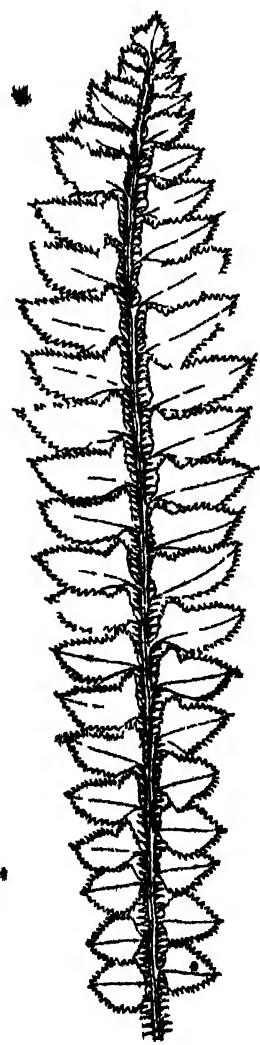
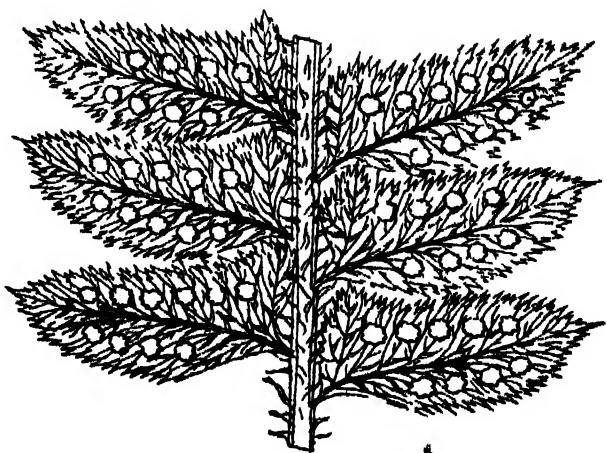
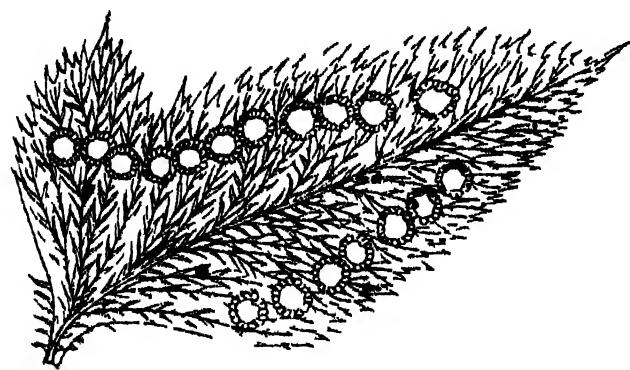
POLYSTICHUM

POLYSTICHUM LONCHITIS (Sw) Caudex short stout oblique densely paleaceous as are the short stipites and lower portion of the rachis with ferruginous large scales fronds 6-18 inches long densely tufted erect rigid lanceolate tapering at both ends pinnated pinnae numerous approximate from a broad nearly sessile obliquely truncated base ovato or lanceolate falcate acute rather than acuminate spinuloso serrate the superior base truncated and auriculate sori confined to upper portion of the frond in two or more series upon the pinnae Hook Sp Fil iv 8 Sw Syn Fil p 43 Willd Sp Pl iv p 224 Sm Fil Brit p 1118 Engl Fil iv p 284 Schk Fil p 29 f 29 Metten Aspid p 41 Hook Lit Arn Brit Fil el 8 p 382 Hook Brit Ferns t 9 —Polypodium Linn Sp Pl p 1518 Engl Bot t 796 Polystichum Roth Pl 1 Germ iii p 71 Presl Moore Brit Ferns Nat Print t 9

The specimen figured is from the N W Himalaya—(Dr Stewart)

Hab Temperate and cooler parts of Europe Michigan U States Lake Superior, British Columbia N W India

PLATE No CXXVIII



Polypodium lonchitis
(L.)

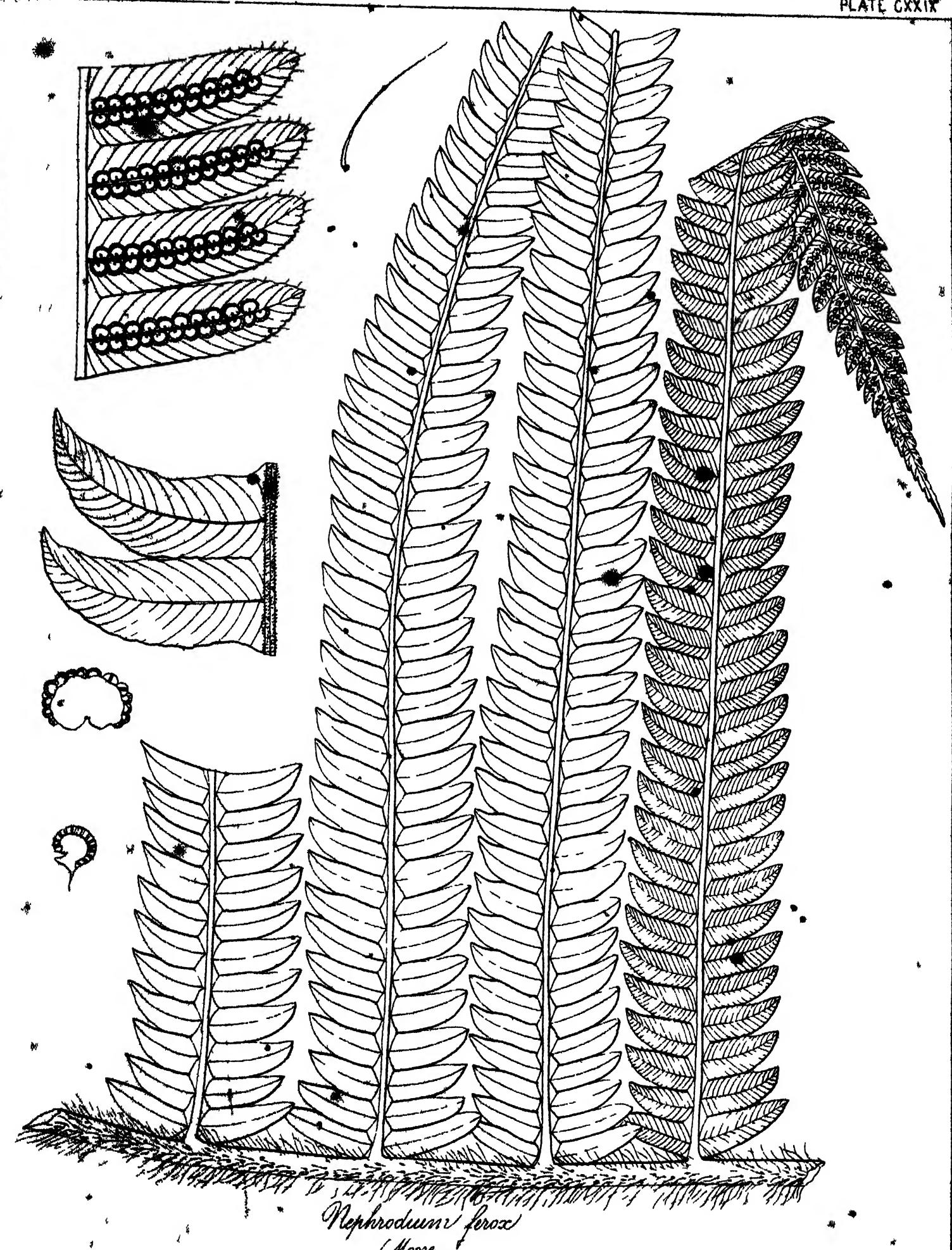
NEPHRODIUM (See Farns of Southern India p 29)

NEPHRODIUM FFROY (Moore) Stipes robust 2 and more feet long ermine with coarse long subulate blackish scales which more or less extend to the rachides each bristle like hair seated on a tubercle fronds ample probably several feet long very rigid and coriaceous glossy 2 3 feet broad (judging by the length of the pinnae) glabrous pinnated pinnae numerous sessile approximate 1 1½ foot long often an inch broad sessile from a truncated base elongato oblong falcate finely acuminate regularly (about one third of the way down from the margin) pinnatifid with ovate acute pungent falcate segments costa and costules prominent beneath veinlets close placed elevated six to eight pairs united and excurrent forming a pseudo costule as distinct as the costule from which they spring and which terminates at the sinus sori in two rows close to the costa apparently forming a single brown transverse line or band not prolonged into the segments Hook Sp Fil iv 77 Aspidium Bl En Fil Jav p 153 —Goniopteris aspera J Sm in Hook Journ Bot vi p 396 —Polypodium asperum Roxb in Herb Linn (fide J Sm), —P scabrum Herb Roxb (fide Wall Cat n 2225) * *

The specimen figured is from the Calcutta Herbarium

Hab Kumaon, Luzon, Java

PLATE No CXXXIX



Nephrodium ferox
(Moore)

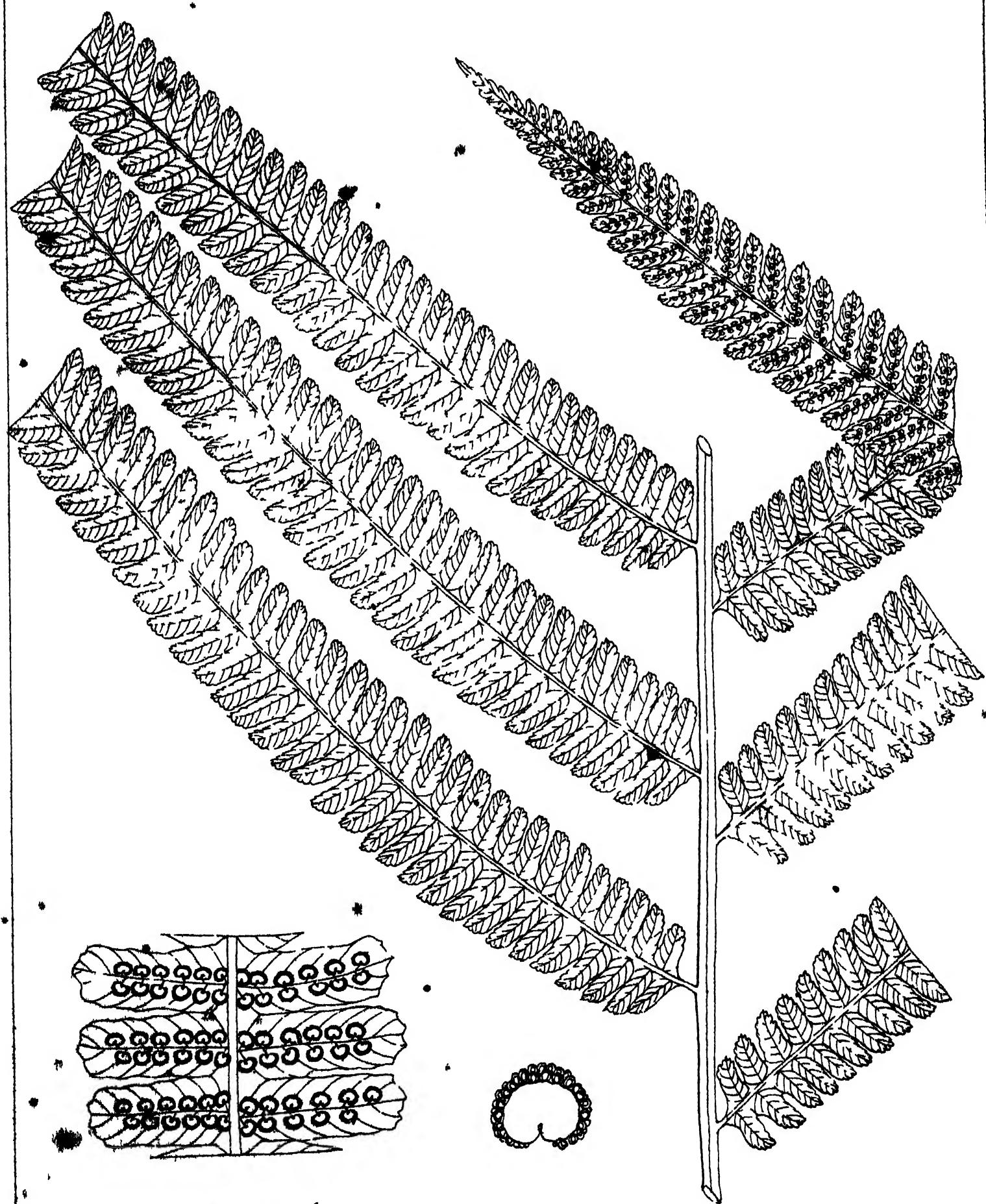
NEPHRODIUM

NEPHRODIUM EUSORUM (Thw) Caudex short fronds glabrous or sub glabrous lanceolate acuminate pinnæ numerous linear acuminate 5-10 inch long $\frac{1}{2}$ to 1 inch broad, sub sessile pinnatifid generally about $\frac{1}{2}$ way down to the rachis segments truncated unconspicuously toothed at the apex veinlets 6-8 pair the lower pair always and generally the 2 lower anastomosing, sori one to each veinlet a little below the middle Thw En, p 391

Mr Thwaites to whom I am indebted for the specimen of this fern informs me that he considers it quite distinct from the *Nep abruptum* (Presl) to which species Sir W Hooker is inclined to refer it All my specimens of *abruptum* have the pinnæ much less divided, and 3 to 6 (never less than 3) pair of veinlets anastomose the segments of the pinnæ are besides very different in shape Mr Thwaites has had both species under cultivation

Hab Ceylon *

PLATE No CXXX



Nephrodium usorium
(Thw)

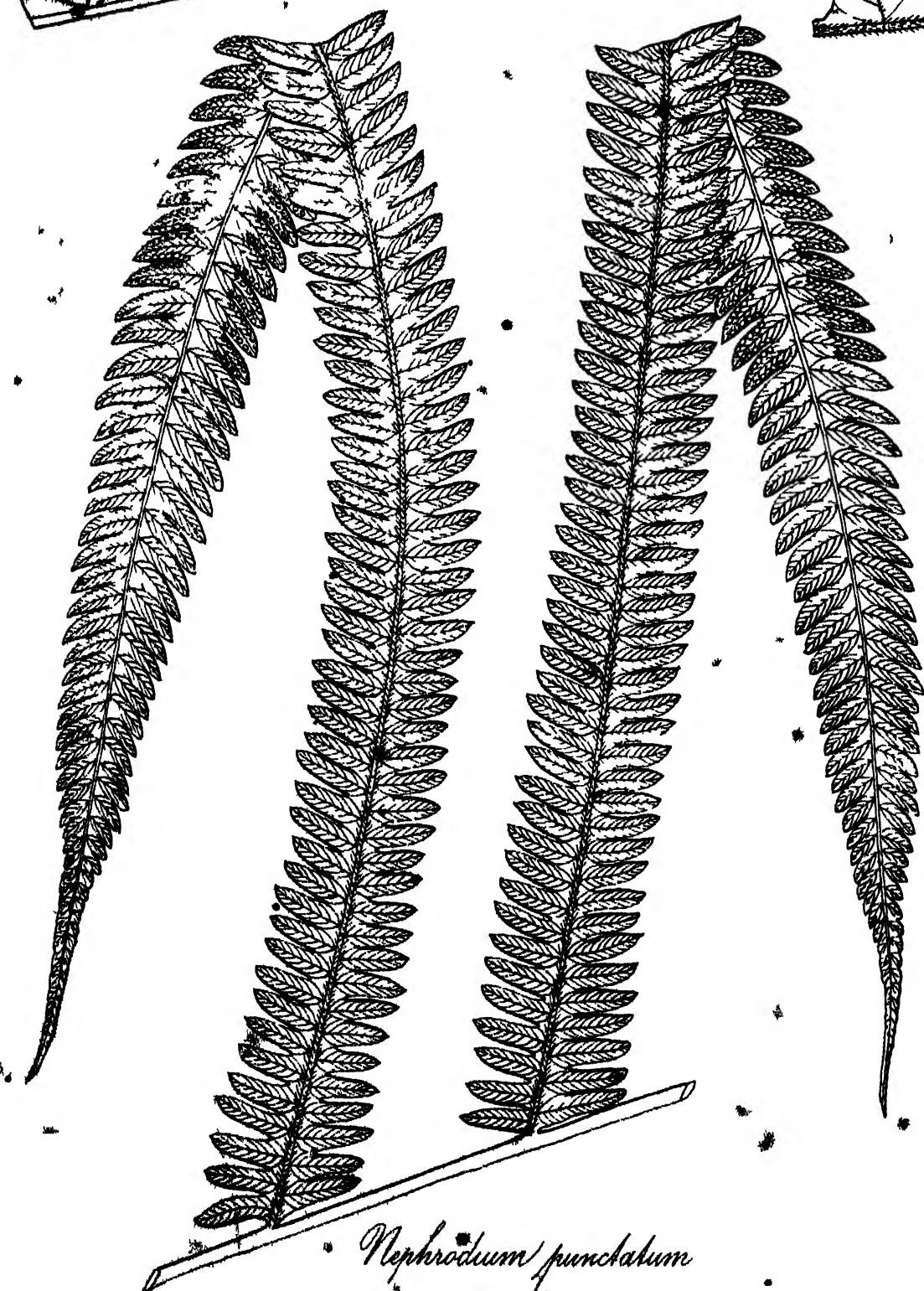
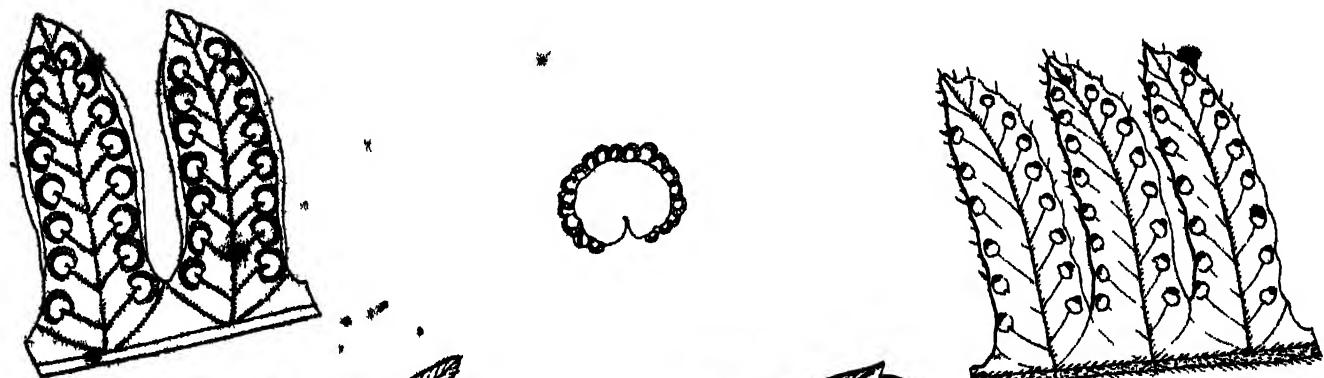
NEPHRODIUM

NEPHRODIUM PUNCTATUM (Parish) Caudex a creeping rhizome stipites solitary distant 1 2 feet long with a few small subulate scales at the base fronds 3 4 feet high broadly ovate pinnate throughout their whole length Pinnæ alternate linear apiculate from 8 inches in the lowest to 12 16 inches long , in the centre over $\frac{3}{4}$ inches broad becoming suddenly shorter at top of frond pinnatifid half way to the costa pinnules subfalcate sori marginal all round the pinnules sunk in the substance of the frond so as to give a punctiform appearance on the upper surface (Parish)

The specimen figured is from Moulmein—(Parish)

Hab Moulmein, damp jungles, rare

PLATE No CXXXI



Nephrodium punctatum
(Barb.)

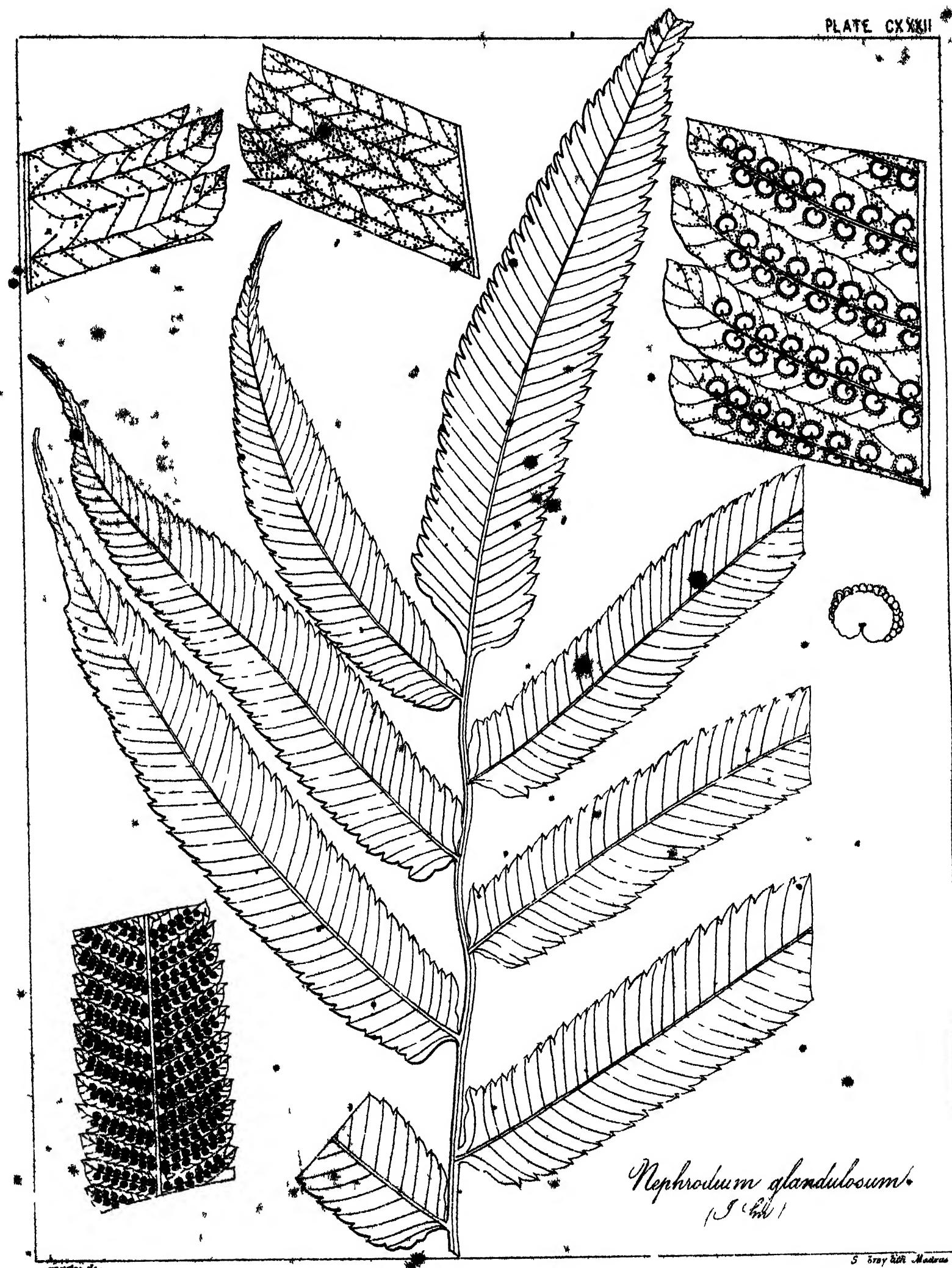
NEPHRODIUM

NEPHRODIUM GLANDULOSUM (J Sm) Fronds coriaceous membranaceous pinnate glabrous on both sides, pinnae alternate sessile from a broad truncated base about 6 inches long and an inch to an inch and a quarter broad gradually and rather long acuminate covered with small glandular tubercles on both sides coarsely lobato serrate, serratures falcate acute veins 9-10 pair generally all anastomosing (except the 2 upper pair in the serratures) and the excurrent veinlets joined throughout and forming a very prominent flexuose pseudo costule the lower pair of veins of one of them is sometimes free, and the excurrent veinlet is also sometimes free in 1 to 4 of the lower areoles so large situated a little below the middle of each vein indusium very apparent reniform —Nephrodium —J Sm in Hook Journ of Bot p 411 —Aspidium —Bl En Pl Jour p 141 / Hook Sp Pl iv 76

The specimen figured is from the Himalayas (Mr Oldham) I am not quite sure whether I have rightly named this and the following species several species of the genus Nephrodium are very closely allied to each other and it is impossible to say that intermediate forms do not exist both these species are closely allied to *N abruptum* Presl the specimens here figured have the fertile and sterile fronds exactly similar and Sir W Hooker describes the *N glandulosum* J Sm and *lineatum* J Sm as having the fronds dimorphous or subdimorphous I do not however attach any importance to this fact as I have often found *N abruptum* with the fronds dimorphous or with broad sterile pinnae and contracted fertile pinnae on the same frond or with both sterile and fertile pinnae exactly similar and I have constantly observed the same tendency in many other genera with dimorphous fronds (Gymnopteris L aciopteris Meniscium &c)

Hab Himalayas 4 sam Jiv 1 land of Leyte

PLATE V, CXXXII



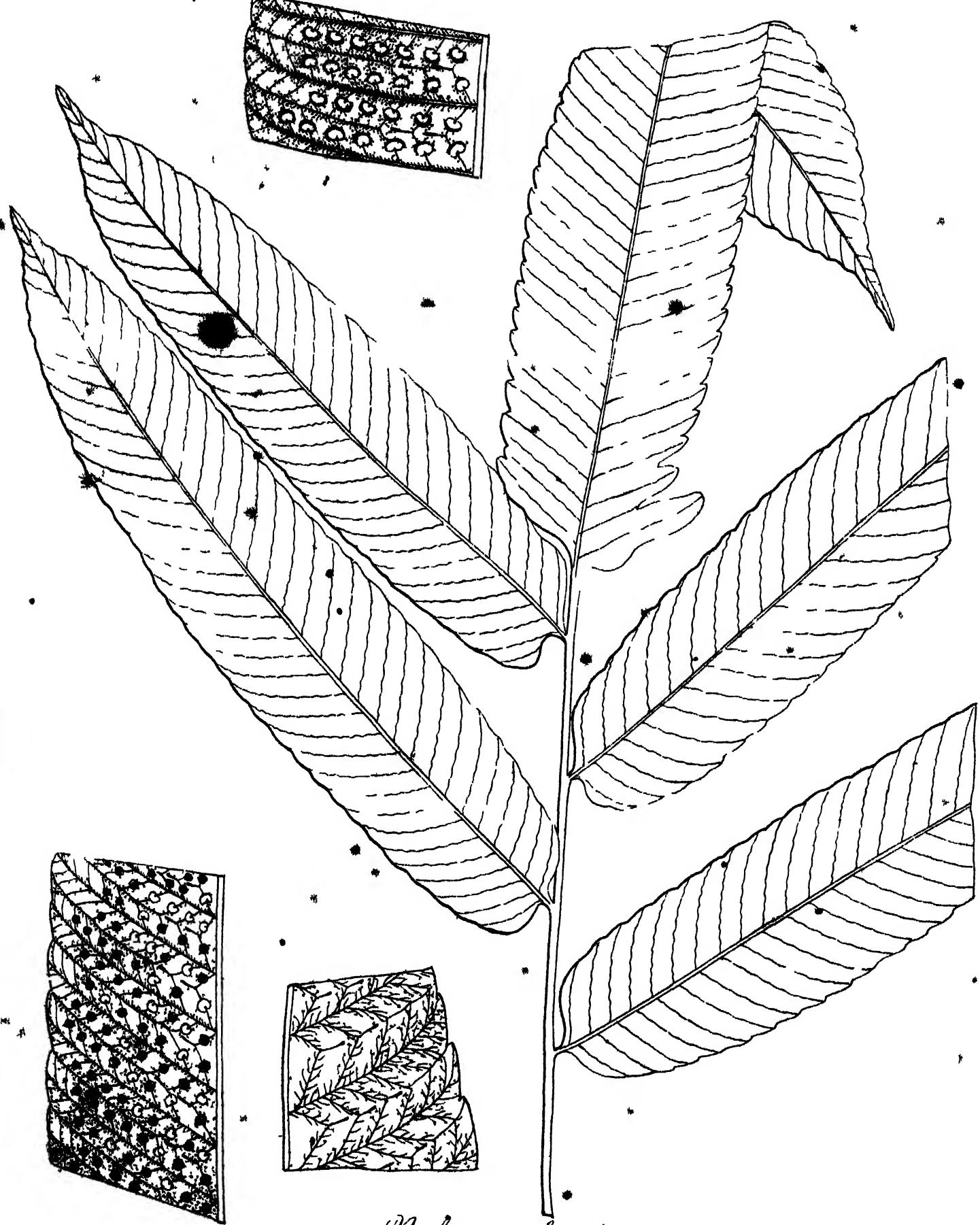
Nephrodium glandulosum.
(S. Gray)

NEPHRODIUM

NEPHRODIUM LINEATUM (Presl) Fronds ovate pinnate veins on the upper side furnished with a few distant longish hairs on the under side slightly pubescent or subglabrous pinnæ alternate sessile or subpetiolate, to 7 inches long by 1 to 1½ broad shortly and rather suddenly acuminate covered with minute glandular tubercles on both sides sub entire or more or less repando serrate terminal pinnæ often lobed towards the base veins 8 or 10 pair all or all but the upper pair anastomosing and at their junction excurrent the excurrent veinlet being generally free in the lowest pair but forming a continuous pseudo costule in all the others, sori small about the middle of each vein indusium apparent reniform *Nephrodium Presl* *Epimel* *Bot* p 48 *Hook Sp Fil* iv 74 —*Aspidium obscurum*? *Bl En Fil* p 150?

The specimen figured is from Nynia Tal (Mr Oldham) It is almost exactly similar to *Goniopteris unphylla* (Pl CCXXXIX) of the ' Ferns of Southern India' except that it is always indusiod as Sir W Hooker observes it is very startling how some ferns of the *Aspidioid* group exactly resemble others of the tribe *Polypodiæ* the presence or absence of the indusium being almost the only distinction

PLATE No CXXXIII



Nephrodium lineatum
(Presl)

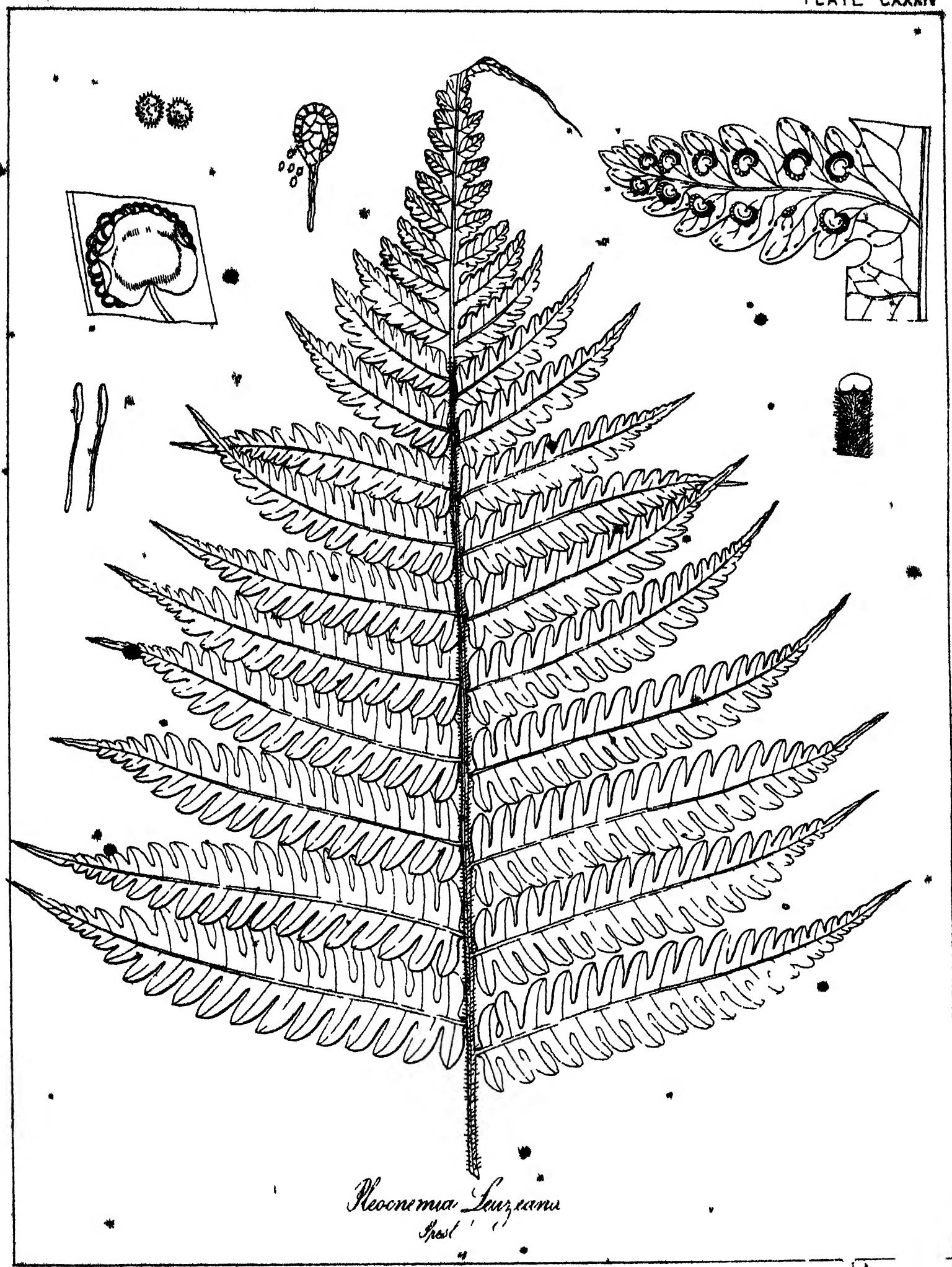
PLEOCNEMIA (See 'Ferns of Southern India,' p 28)

PLEOCNEMIA LIUZEANIA (Kze) Stipes 1½ foot long stout angular or nitate at the base with very long subulate flexu or silky scales fronds large ample submembranaceous tripinnate primary pinnae a foot and more long, ovate acuminate petiolate pinnae 3 4 inches long petiolulate from a broad subcordate base oblong deeply (more than half way down) pinnatifid, ending in a rather long entire acumen fertile ones often contracted segments oblong obtuse subfalcate entire crenato-serrate the basal ones rarely sublobato pinnatifid veins uniting and forming elongated areoles near the costa in the sterile more or less united and reticulated at a distance from the costa sori conspicuous more or less remote from the margins involucres orbicular cordate readily deciduous Hook. Sp Fil iv 61 — Aspidium Leuzeanum Kze Bot Zeit 14 474 Metten Fil Hort Lips p 94 t 22 f 89 — Pleocnemia Pr Tent Pterul p 183 Epimel Plant p 50 Hook Gen Fil t 70 A (involucres omitted) and t 97 J Sm in Hook Journ Bot in p 411 Brock fil 1 S Expl Exp p 183 — Polypodium Caud in Freyc Voy p 371 t 6 — Pleocnemia Cumingiana (fertile portions of the frond more contracted) Pr Epimel Bot, p 50 — Aspidium conjugatum Bl En Fil Jav p 169 — Pleocnemia conjug Pr Epimel Bot p 259 and I Javanica p 50

The specimen figured is from Burmah—(Parish)

Hab Moluccas Java Ceram Luzon, China Mishmee and Assam Sylhet, Burmah, Samoan and Feejee Islands

PLATE No CXXIV



Neoneuria Leuziana
Presl

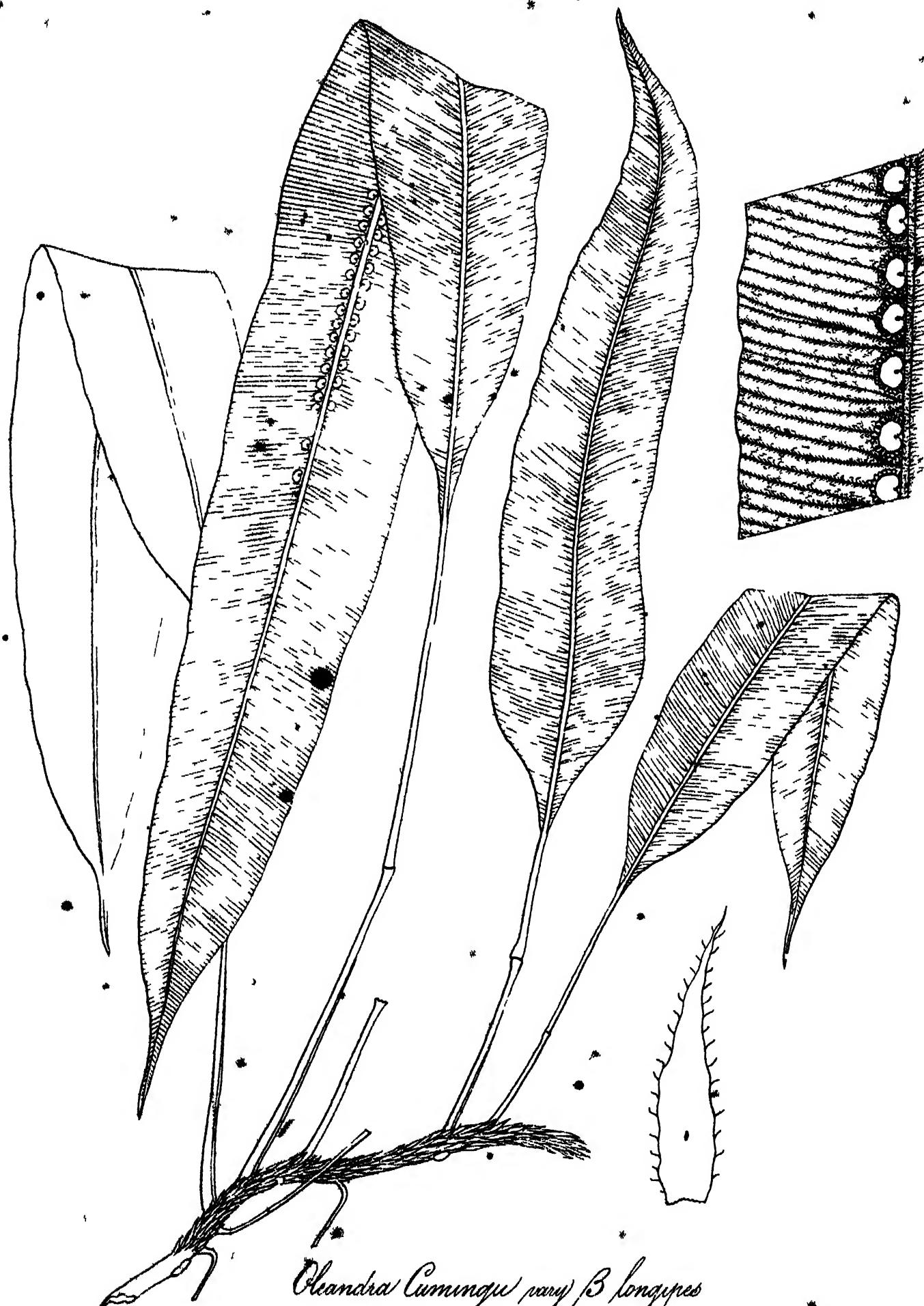
OLEANDRA (See 'Ferns of Southern India' p 32)

OLEANDRA CUMINGII (J Sm) Caudex apparently creeping scarcely so thick as a writing pen, clothed with close pressed subulate imbricated scales stipites subterminal and subaggregated 2 3 inches long slightly downy articulated within $\frac{1}{2}$ $\frac{1}{4}$ of an inch from the base fronds 1 1 $\frac{1}{2}$ foot long firm membranaceous elongato lanceolate acuminate very much attenuated and gradually decurrent at the base pubescent villous on the costa and veins sooty rather large forming a single and scarcely interrupted line very near to and on each side the costa Hook Sp Fil iv 158 J Sm in Hook Journ Bot iii p 413 (name only) I, Epimel Bot p 41 —— or β longipes —stipes 4 6 inches long inferior articulation 1 2 $\frac{1}{2}$ inches long fronds less attenuated at the base sori quite costal in one instance irregularly scattered at a distance from the costa

The specimen figured is from Birmah—(Parikh)

Hab. Luzon Birmah Assam

PLATE No CXXXV



Olaandra Cumming var. B longipes
(S. St. L.)

POLYSTICHUM (See 'Ferns of Southern India' p 41)

POLYSTICHUM AURICULATUM (VAR) SUBBIPINNATUM (Hook) Pinnae subcoriaceous, variously and deeply lobed and toothed, below frequently again pinnated the lobes and pinnules spinulose (thus bordering on aculeatum var lobatum)—*Hook Sp Fil iv p 11 Aspidium ocellatum —Wall Cat n 98 —A lentum, Don Syn. Nep p 4*

The specimen figured is from the Khasya Hills, (Dr Thomson) though differing considerably from the normal state of *P auriculatum* (Pl CXX of the Ferns of Southern India) Sir W Hooker only considered it a variety of that species

Hab Nepaul, Kumaon (elevation 2,600 feet,) Khasya, Harabagh.

PLATE No CXXXVI



Polystichum auriculatum
var. *bipinnatum* (L.) Gray

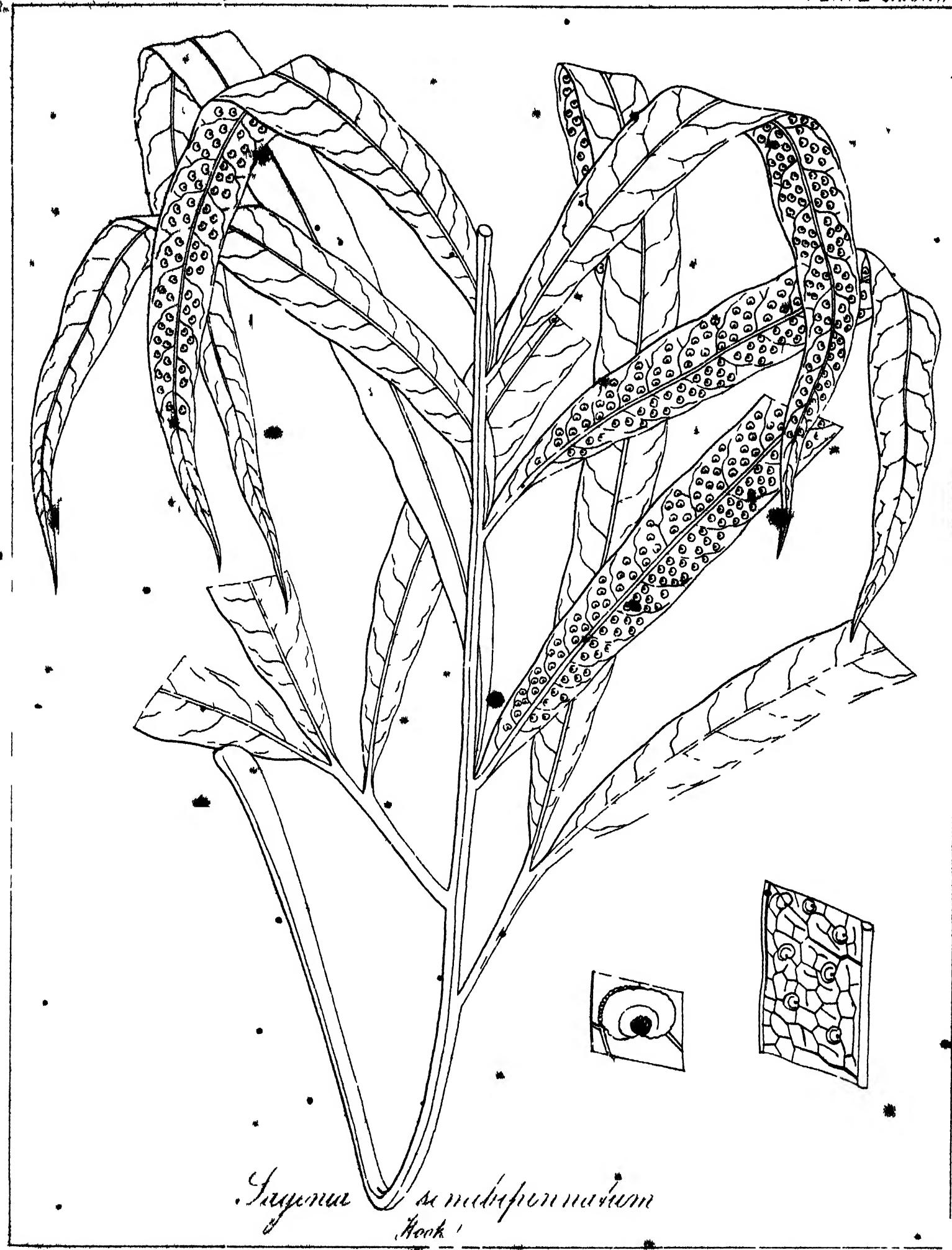
SAGENIA (See 'Ferns of Southern India' p 27)

SAGENIA SEMIBIPINNATA (Hook) Caudex creeping scaly stipites a span to a foot high striated with prominent angles reddish brown as well as the rachis and costæ fronds 1 1½ foot long oblong ovate in circumscription coriaceous membranaceous dark brown when dry glabrous sub bi tripinnate pinnae 9 11 6 10 inches long, linear lanceolate subflexuose acuminate tapering at the base quite entire strongly costate the lowest pair or two pairs long petiolate tripartite or 3 foliate, sometimes again divided so as to be twice trifoliate, ~~prungy~~ veins sub horizontal united by arches with the margin, the rest variously anastomosing, the areoles appendiculate sori (only young and imperfect) compital involucro subreniform — *Hook Sp Fl* iv p 59 *Polypodium semi bipinnatum* — *Wall Cat* n 388 and 2,229

The figure is taken from Sir W Hooker's Sp Fl

Hab Penang, Borneo

PLATE No CXXXVII



Iugenera semibifurcata
Hook.

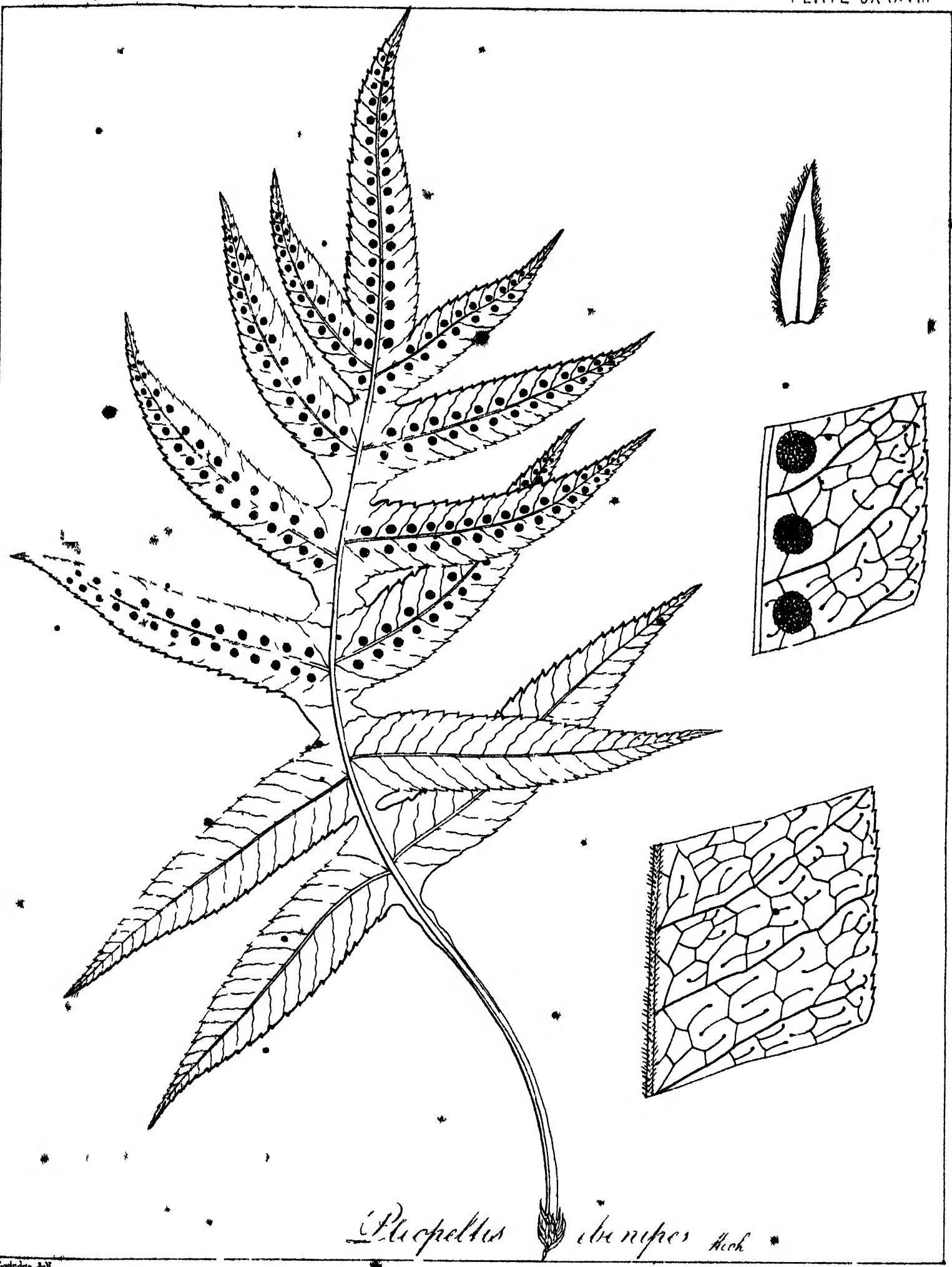
PLEOPELTIS (See 'Ferns of Southern India, p 57)

PLEOPELTIS EBENIPES (Hook) Caudex stout creeping elongated and knotted with short frondiferous branches, every where densely imbricated with intensely black polished ovato lanceolate subcoriaceous concave scales fusco pubescent at the margin stipites stiamineous 6 inches to a span long fronds a span to 1½ foot long broad ovate or deltoid cordate at the base, acuminate (by the long terminal segment) coriaceous membranaceous subrufescent when dry minutely and compactly puberulo punctate deeply pinnatifid with acute or obtuse sinuses segments 4 or inches long ¾ 1 inch wide, very patent from a broad base oblong lanceolate sharply acuminate, closely serrated lowest pair generally opposite and drawn in as it were at the very base so as to form a more or less deep sinus at the summit of the stipes, venation very manifest costules distinct parallel moderately distant extending to the margin, these are united by transverse veins forming about 3-4 series of areoles including free and connected veinlets of which the second only are soriferous sori very large orbicular in a single series very near the costa.—*Hook Sp Fil* iv p 88 *Polypodium melanopus*—*B* in *Wall Cat* n 293 in part (*v Cat* n 293 at p 83, not *P melanopus* Hook and Grev.)

The specimen figured is from Sikkim, (Dr Thomson)

Hab Nepaul (10,000 feet elevation), N W Himalaya (8—9,000 feet elevation) Sikkim (8,000 feet)

PLATE No CXXXVIII



Pteris tremula L. *schizophylla* Hook.

§ 10—*Menisciæ*(1) *Veins arcuately anastomosing forming costal areoles venules free***BRAINEA** *J Smith Catalogue of Kew Ferns, 1856* v

(Bowringia Hook non Chamyion)

Gen char Sori non indusiate short transverse curved the receptacles seated on the arcuate costal veins and often extending more or less up the parallel oblique free venules at length irregularly confluent Veins arcuately anastomosing at the base forming costal areoles venules simple or forked parallel connivent with the thickened margin

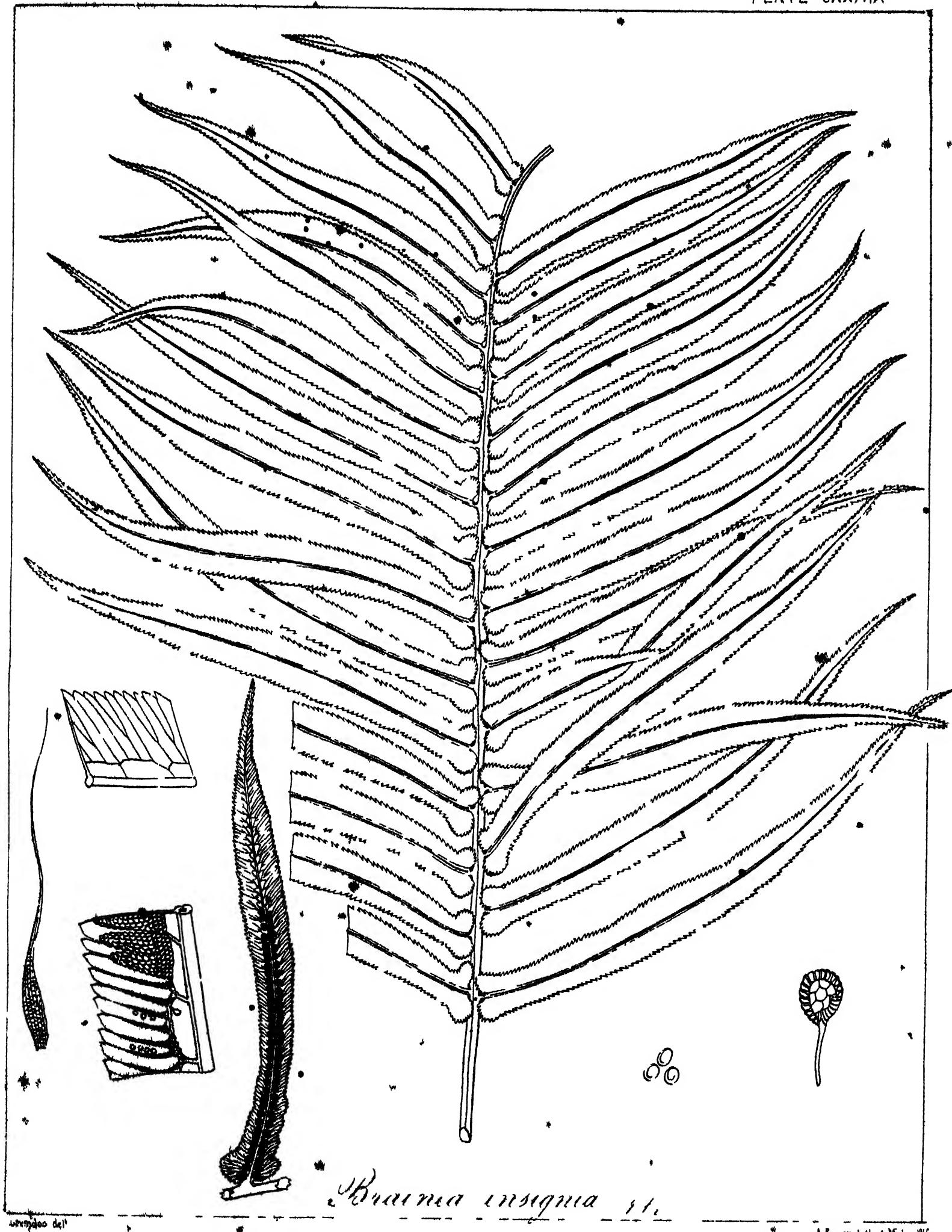
Fronds rigid coriaceous pinnate, becoming pinnato pinnatifid Rhizome arborescent 3-4 feet high (Moore)

BRAINEA INSIGNIS (Hook) Caudex arborescent as thick as a man's arm clothed with shaggy dark brown or ferruginous long subulate lanceolate scales stipites stout, short scarcely a span long fronds not unlike a *Lomaria* firm coriaceous bright-green pinnated or below bipinnated pinnae very close placed horizontal 6 inches long 4 lines broad, from a cordate base linear oblong gradually and finely acuminate minutely serrated—*Hook Sp Fil* v 162 Bowringia, *Hook Kew Gard Misc* v p 23 t 2—*Hook Fil Errol t 39*

The specimen figured is from Burmah (the Pine Forests) [Parish]

Hab Hongkong Eastern Bengal Khasya (elevation 4000 feet) Burmah

PLATE No CXXXIX



Schizoloma insignia St.

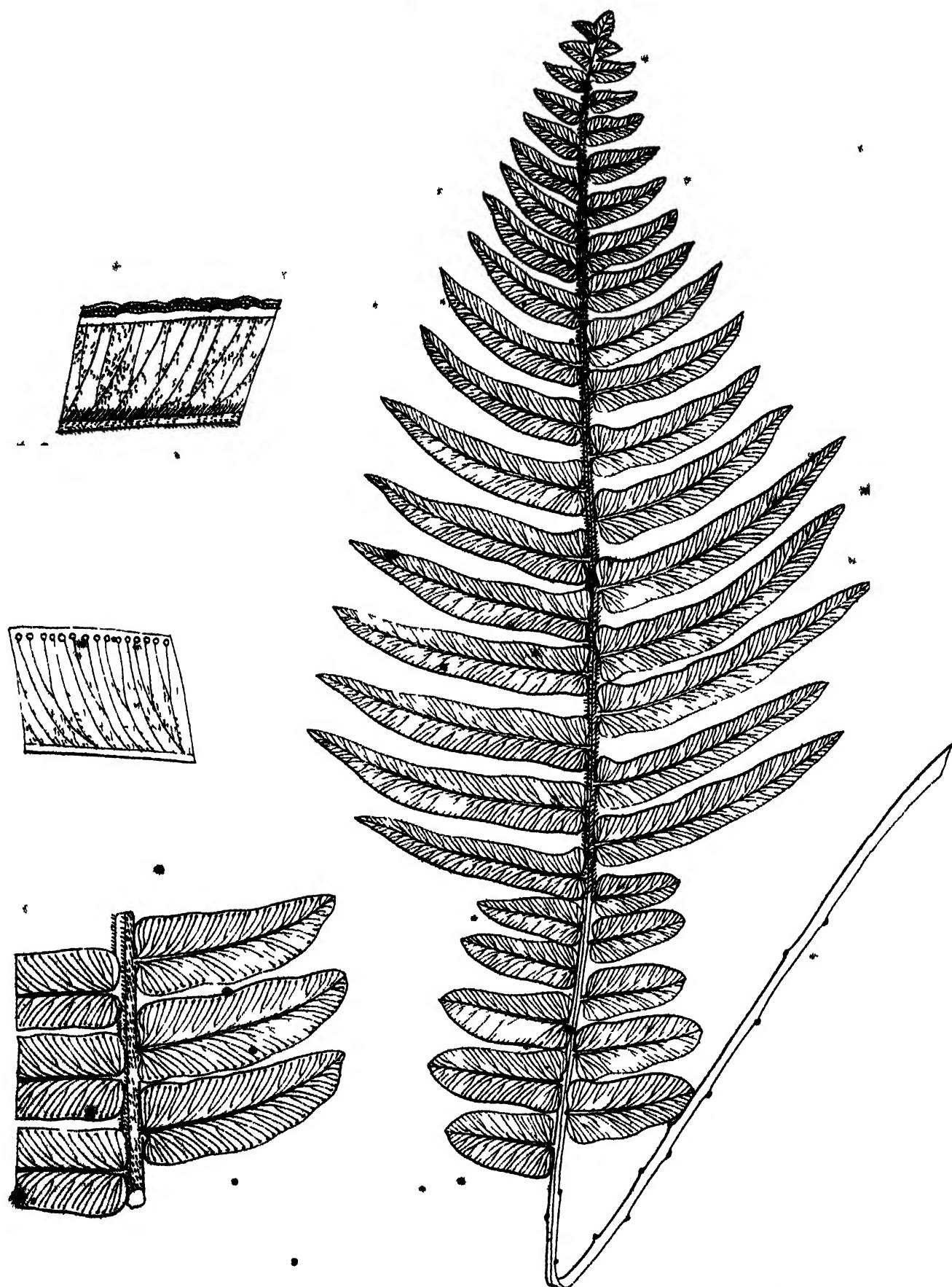
LINDSÆA (See 'Ferns of Southern India,' p 7)

LINDSÆA LANUGINOSA (J Sm) Caudex tall robust fronds up to 3 feet long oblong lanceolate pinnated pinnae sub coriaceous approximate very numerous oblong approaching to lanceolate more or less falcato incurved obtuse or acute, deciduous the sides equal the base truncate sessile, below clothed with deciduous wool, costa central veins spreading copious, in old fronds terminating on the upper side in white crenaceous dots just within the margin, sorus on both sides and at the margin continuous, stipes short and rachis (stout) more or less woolly — *Hool Sp Fil* 1 p 210 *Wall Cat* n 154 *Isoloma, J Sm*

The specimen figured is from Burmah (Parish)

Hab Singapore, Penang, New Guinea, Burmah

PLATE No CXL



Lindsaea lanuginosa
Wall

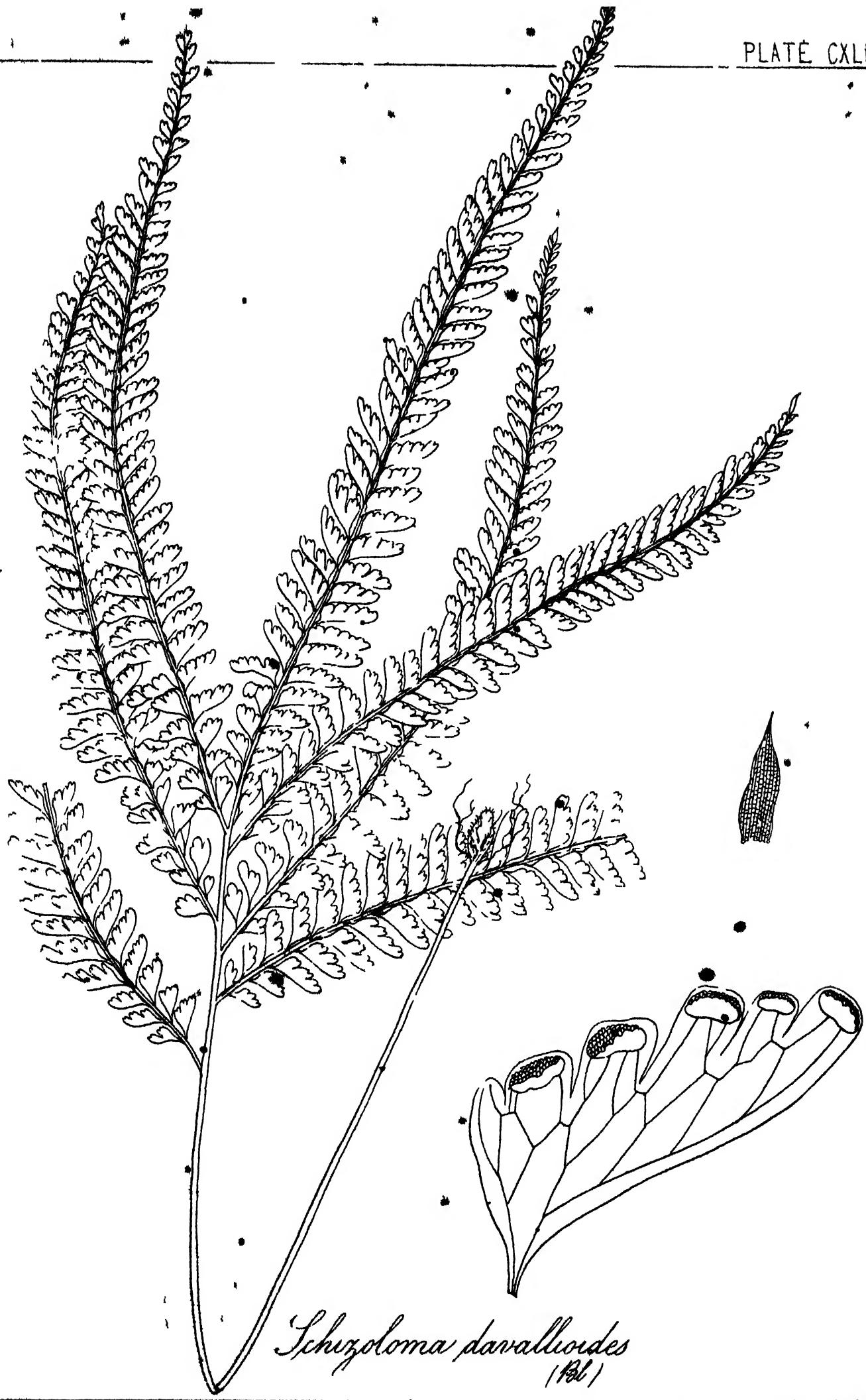
SCHIZOLOMA (See *Feins of Southern India* ' p 9)

SCHIZOLOMA DAVALLIOIDES (Bl) Caudex creeping stipes and rachis long tetragonous glabrous stipites tufted frond subdeltoid ovate bipinnate pinnae erecto patent lanceolate acuminate, pinnules dimidiato oblique membranaceous reticulated (reticulations few) the apex obtuse superior base truncate costa at the inferior margin superior margin rather deeply but irregularly lobed non interrupted linear confined to the apices of the lobes—*Hook Sp Fil* 1 224 *Bl Fil Jav* p 218 *Lindsaea lobata*, *Wall Cat* n 152 *Davalha Kunziana*—*Hook Sp Fil* 1 177

The figure is taken from Sir W Hooker's Sp Fil

Hab Singapore, Java, Malacca

PLATE No CXLI



Schizoloma davalliorides
(P.B.)

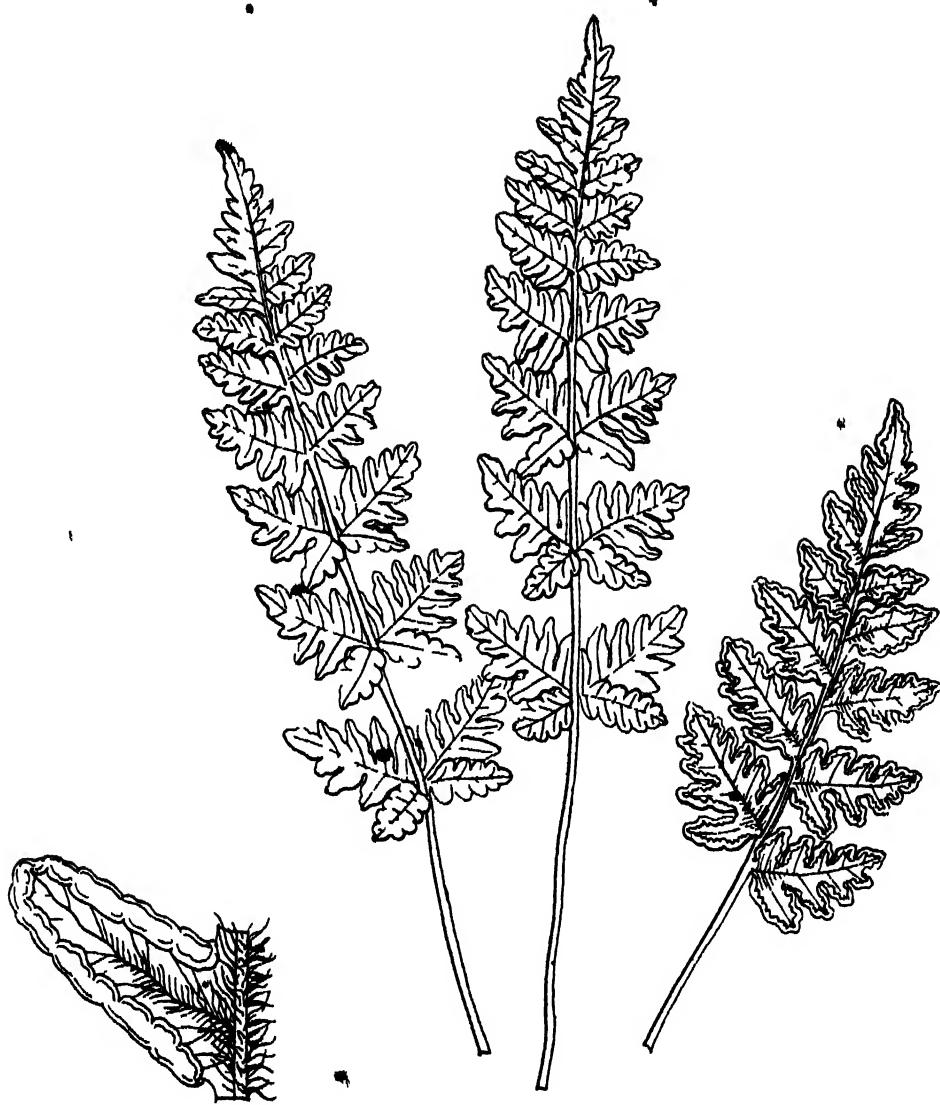
CHEILANTHES (See 'Ferns of Southern India' p 63)

CHEILANTHES SUBVILLOSA (Hook) Stipes shining brown slightly scaly frond broad lanceolate or ovate pinnate thin sub membranaceous glabrous above soft villous about the rachises beneath, pinnae all obtuse upper ones lanceolate the rest broad deltoid lanceolate or ovate pinnatifid rarely the lowest lacinia again pinnatifid the margin nearly entire involucres of nearly the same color and texture as the frond sometimes subrotund and free mostly continuous lobed and crenated main rachis especially above villous Hook Sp Fl 1 p 87

* The figure is taken from Sir W Hooker's Sp Fl

Hab Western Himalaya

PLATE No CXLII



Cheilanthes subvallaris
(Horn)

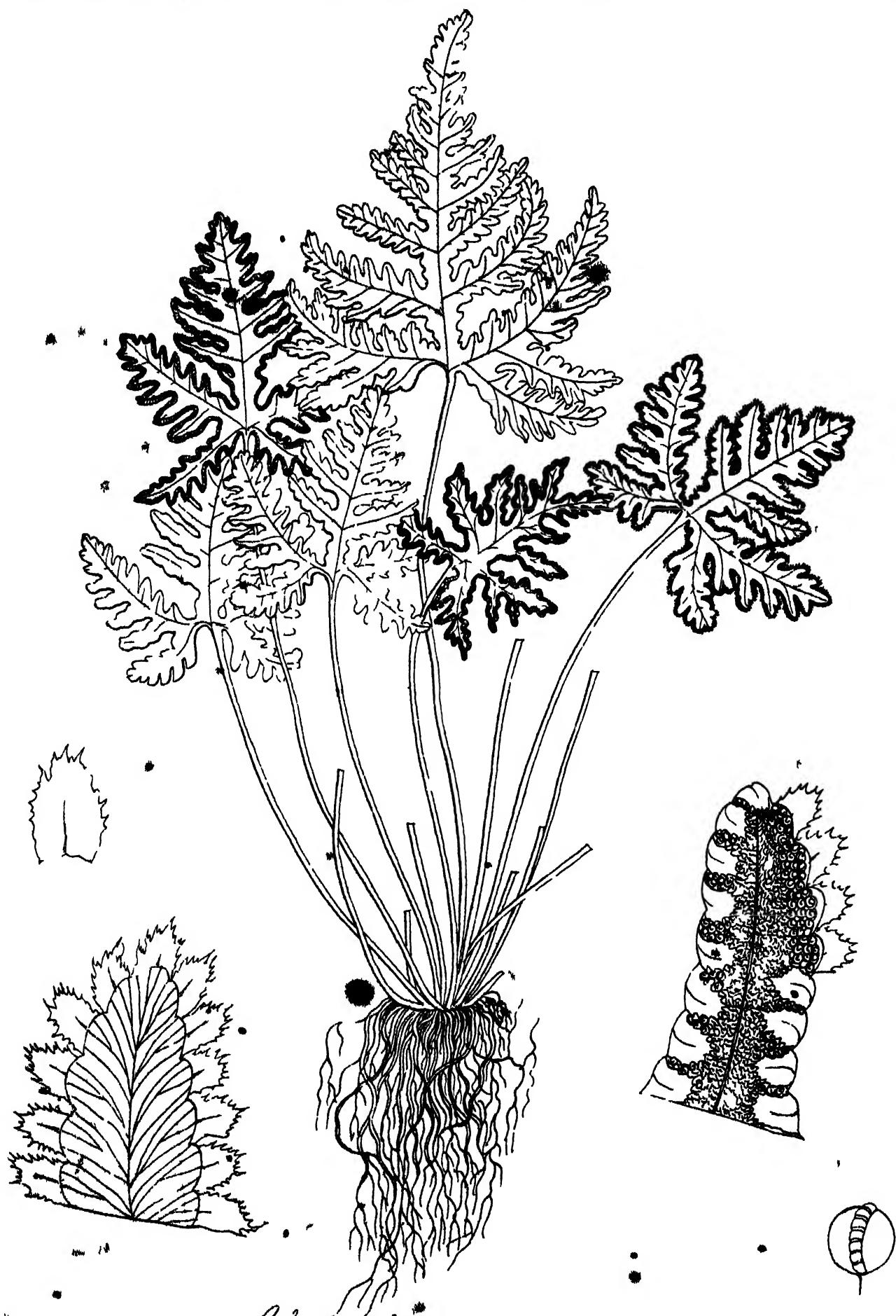
CHEILANTHES

CHEILANTHES ARGENTEA (Hook.) Glabrous glossy brown a little scaly below caudex short thick creeping stipites tufted broad cordately 5 angled tripartite white and pulverulent beneath each of the three primary divisions pinnatifid at their base bipinnatifid the margin crenated involucres membranaceous brown confluent transversely waved and crenated — Hook Sp Fil 1 p 76
Pteris argentea, Gmel in Nova Acta Petrop XII t 12 f 2 *Allosorus Presl* Cisebeera J Sm — *Pteris pedata* var *Linn*

The specimen figured is from Burmah, (Parish)

Lab Burmah, Siberia, Kamtschatka, Dahuria Lake Baikal

PLATE No CXLIII



Polypodium argenteum
Host

CHEILANTHES

CHEILANTHES RUFA (Don) Roots tufted stipites rather short with few spreading scales and shaggy as is the whole rachis with very copious spreading ferruginous hairs fronds about a span long ovato lanceolate subcoriaceous hirsuto pubescent above white and pulvlerulent beneath, the margin densely ferruginous hirsute pinnatifid at the apex pinnae oblong very obtuse pinnatifid the lower ones subovate sub bipinnatifid involucres dark brown membranaceous approximate and free or continuous and waved and crisped or lobed and toothed at the margin, often quite concealed by the copious ferruginous tomentose shaggy hairs — *Hook Sp Fil* 1 p 79 — *Don Prod Pl Aop* p 18 *Cheilanthes farinosa var vestita* — *Wall Cat* n 71 (4)

The specimen figured is from Burmah (Parish)

Hab Nepaul, Mergui, Mishmee, Burmah, Khasya, Simla

ILLATE No CXLIV



Phelanthus rufa
(Dm.)

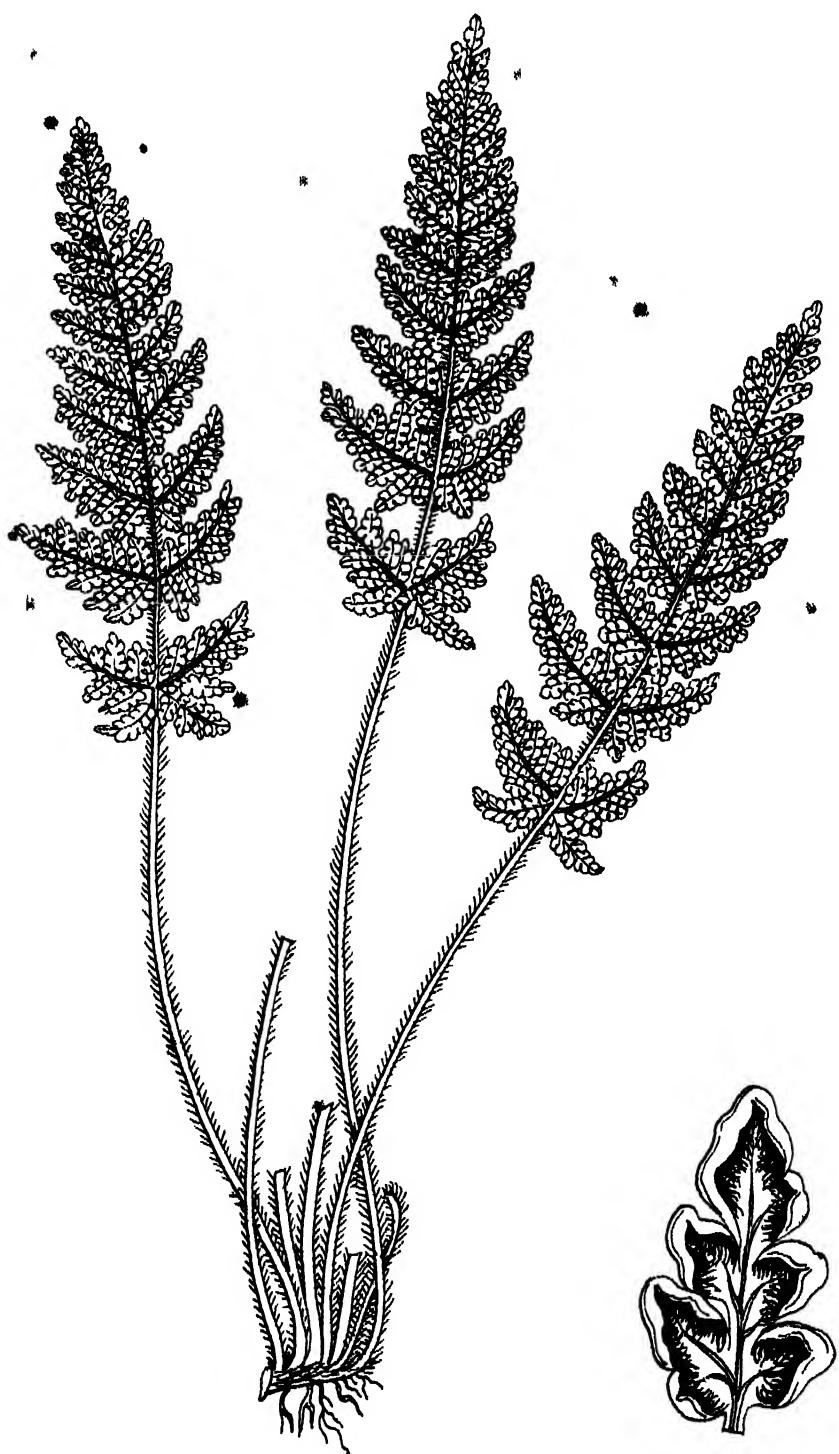
(HEILANTHES

HEILANTHES SZOVITZII (Fisch et Mey) Roots densely tufted from a short thick caudex, stipites crowded 2 4 inches long slender and as well as the principal rachises ebeneous somewhat hairy mixed with copious long spreading subulate scales fronds 3 4 inches long oblong lanceolate quite glabrous above densely woolly and generally tawny beneath tri subquadripinnate primary pinnae crenate acuminate approximate or distant pinnules small subrotund or subcordate sublobate terminal ones often larger and oblong the margin revolute forming nearly a continuous involucre the edges obscurely membranaceous —*Hook Sp Fil 1 p 98 Fisch et Mey in Hohenacker Fn Pl Prov Talysh p 11*

The figure is taken from Sir W Hooker's Sp Fil

Hab Caucasian Alps Afghanistan, Peshawar Indus Valley (7500 feet elevation) Kashmir, and Western Thibet (8,000 feet elevation) Scinde

ILLT No CIV



Chilanthes Szoutzii
(Focke et May)

ASPLENIUM (See "Ferns of Southern India, p 42)

ASPLENIUM FONTANUM (Bernh) Caudex short thick tuberous densely rooting stipites 1 3 inches in length slender pale brownish green densely tufted fronds 3 6 inches long linear or broad lanceolate attenuated below membranaceous bright green bipinnate, pinnae approximate $\frac{1}{4}$ to $\frac{1}{2}$ an inch long patent or sometimes reflexed sessile ovate obtuse lowest ones dwarfed tripartite 1 in nules obovate or cuneate minute $\frac{1}{2}$ a line to a line long the base entire the rest coarsely and spinuloso dentate sori few on each pinnule or lobe at length confluent, involucres very small athyroid white thin membranaceous — *Hook Sp Fl* in p 193 — *Bernhard in Schmid Neu Journ 1806* 1 part 2 p 26 — *Sw Syn Fl* p 57 — *Willd Sp Pl v* p 272, — *Engl Bot t 2,024* — *Mett Aspl* p 140 **Athyrium** *Loth* — **Asplenium Halleri** *Willd Sp Fl v* p 274

The specimen figured is from the Himalayas, (Dr Stewart)

Hab Europe, Britain, Himalayas

PLATE No CXLVI



Asplenium fontanum
Burm

ASPLENIUM

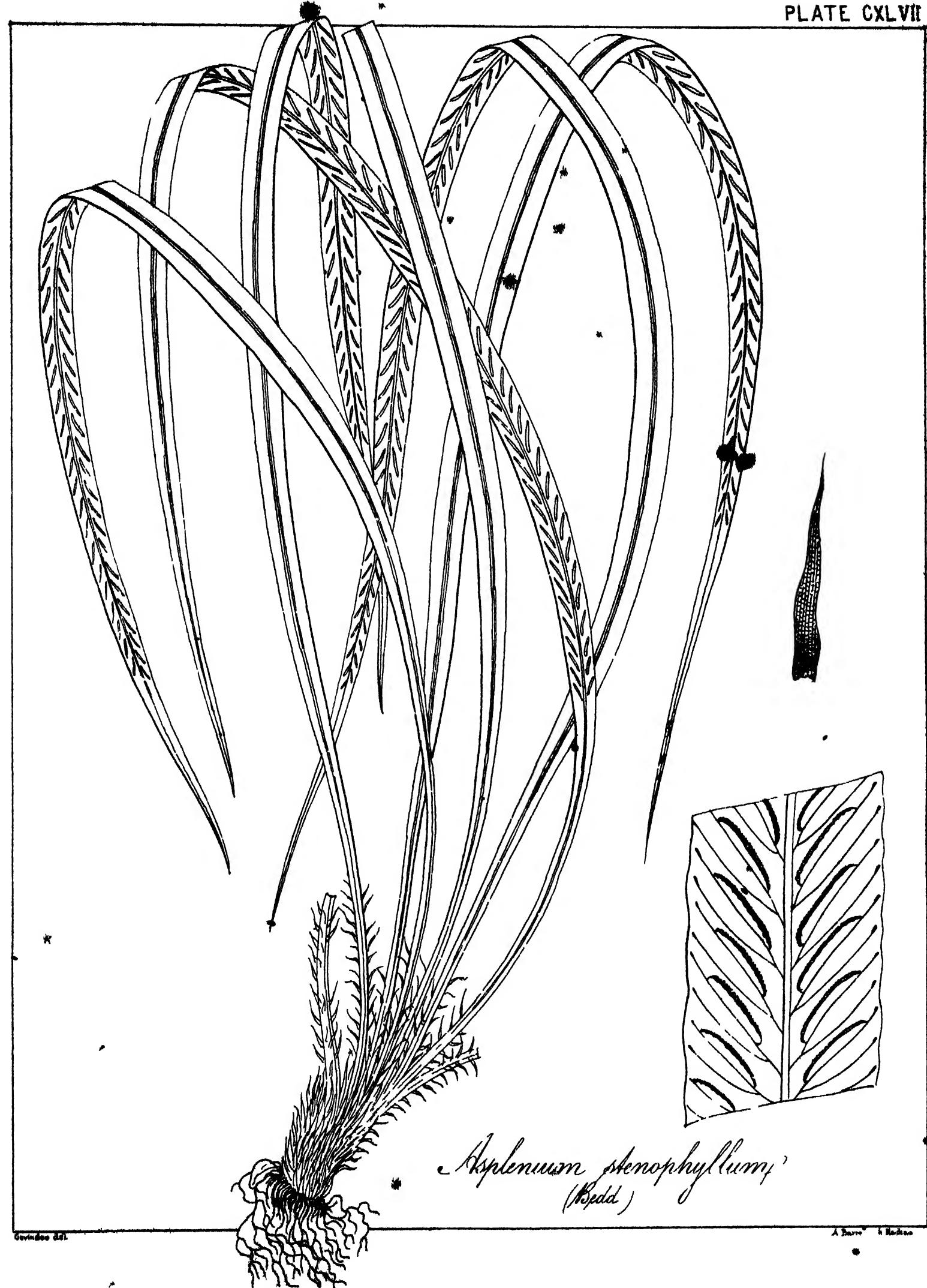
ASPLENIUM STENOPHYLLUM (Bedd.) Caudex creeping densely clothed with linear acuminate black smooth scales, fronds subcoriaceous narrow linear acuminate 1 to 18 inches long $\frac{1}{4}$ to $\frac{3}{8}$ th of an inch broad perfectly glabrous gradually attenuated into a short stipe which is more or less furnished with scales similar to those on the caudex costa prominent sulcate veins sunken inconspicuous once forked terminating within the margin sori linear on the superior veinlet neither reaching to the costa nor extending to the margin involucres conspicuous

Allied to *A. ensiforme* (Wall.) but with very narrow fronds like a *Vittaria*

The specimen figured is from Rungro, Sikkim (elevation 6000 feet) (Dr Anderson)

Hab. Sikkim—Himalaya

PLATE No CXLVII



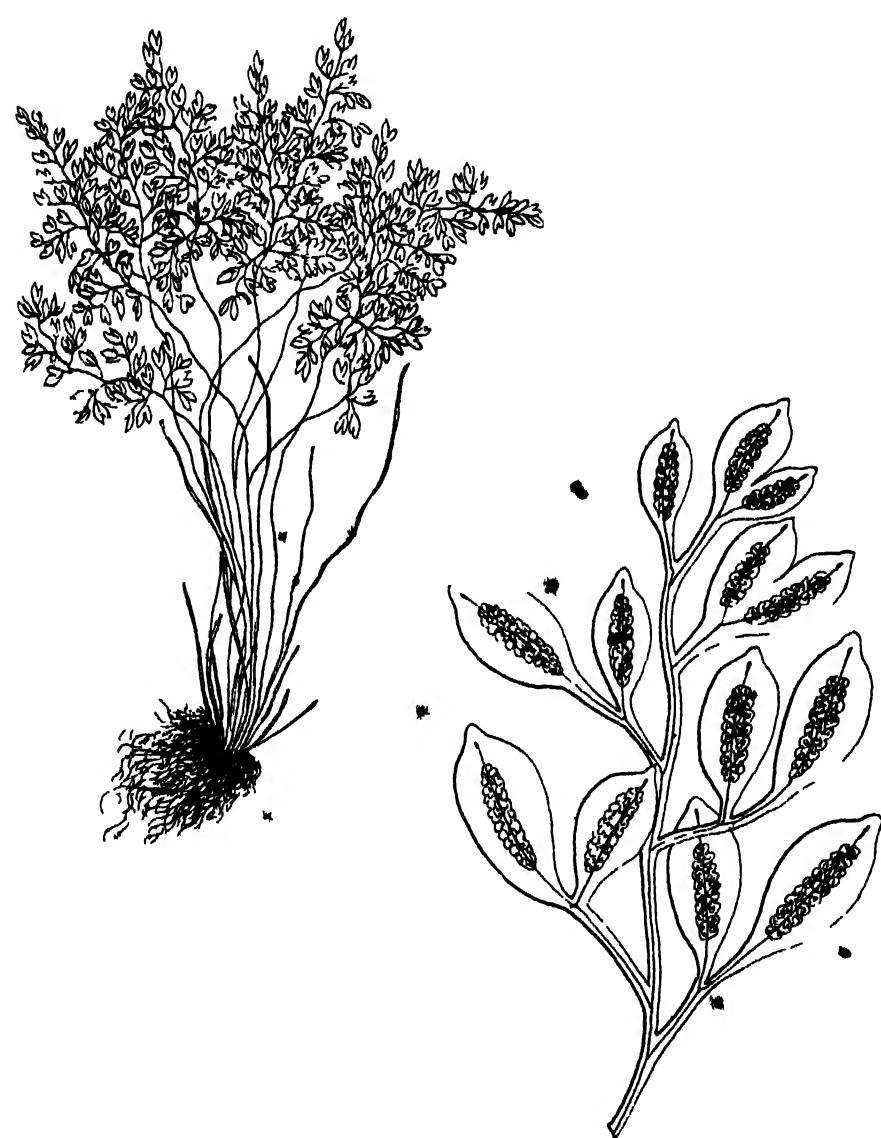
GRAMMITIS (See "Ferns of Southern India" p 17)

GRAMMITIS MICROPHYLLA (Hook) Caudex very slender filiform subrepent and intertwined so as to form a collection of tufted wiry fibres, stipites copious slender filiform very fragile dark purple ebeneous glossy 2 4 inches long fronds membranaceous sub diaphanous 1½ 2½ inches long glabrous triangular ovate 3 pinnate (or pinnate and 2 3 pinnatifid) lowest primary pinnae half ovate the rest oblong ultimate pinnules (or segments) oval lanceolate entire acute decurrent upon the rachises which thus become winged veins dichotomous one in each pinnule or segment oblong not forked, venlets terminating below the apex — *Hook Sp Fil v p 129 Ic Pl t 1916 Cent of Ferns t 16*

The specimen figured is from the Khasya Hills

Hub Khasya Hills

PLATE No CXLVIII



Grammitis macrophylla
(Hook.)

§13 GYMNOGRAMMEA

(c) *Veins conveniently anastomosing below*

STEGNOGRAMMA. Bl En Fil Java 172

(Syneuron J Sm M S—Gymnogrammitis Sp Bl—Phegopteris Sp Mettenius)

Gen char. *Sori* non indusiate linear or oblong oblique parallel the *receptacles* simple elongated and medial *Veins* simple from a central costa the lower or more opposite pairs angularly convenient anastomosing

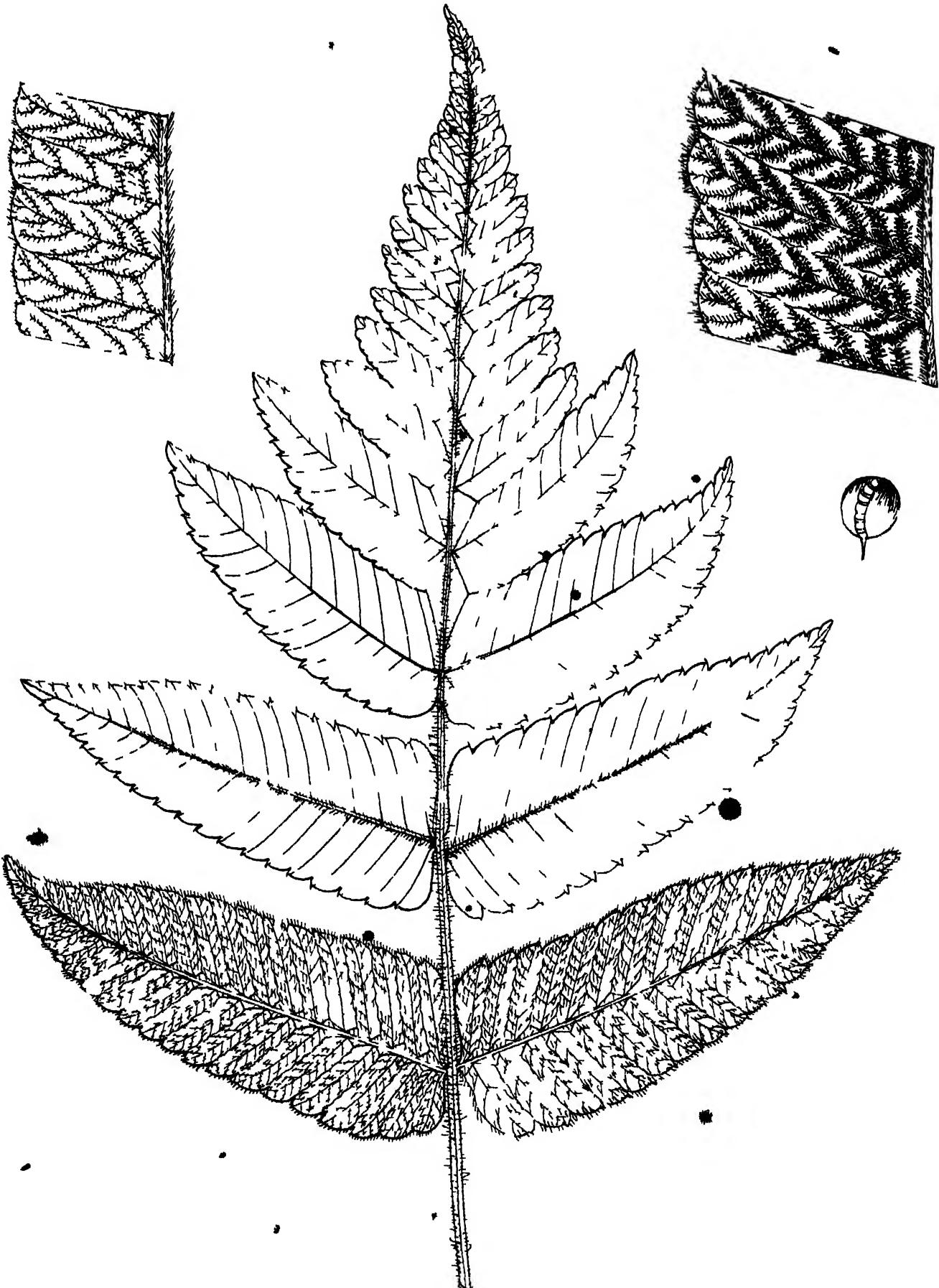
Fronds herbaceous pinnate or pinnato pinnatifid Rhizome thickish decumbent or erect and sub arborescent This is amongst Gymnogrammea what *Nephrodium* is amongst *Aspidiaceae* and *Goniopteris* among *Lolypodiaceae* (Moore)

STEGNOGRAMMA ASPIDIOIDES (Bl.) Caudex ascending more or less paleaceous subrepent *whole* plant on both sides especially on the veins hairy (except the caudex) sometimes densely villous stipites terminal on the caudex tufted a span to a foot long a length glabrous glossy fronds 1 1½ foot long 5 6 inches wide ovate lanceolate acuminate pinnatifid at the apex firm membranaceous pinna opposite or alternate sessile subtruncate or more or less adnate at the base 3 4 inches long rarely an inch wide oblongo lanceolate lobato pinnatifid superior ones confluent veins 5 6 pairs from each costule simple 3 lower ones united to those opposite and forming an excurrent spurious vein reaching to the sinus those in the lobes free all soriferous sori linear oblong occupying nearly the whole length of the veins—*Hook* Sp Fil v 150—*Bl En Fil Jav* p 172 (not *En Fil Jav* p 112 which is *Gymnogramma totta*) *Gymnogramme Stegnogramme Bl Fil Jav* p 98 t 44 *Phegopteris Stegnogramme, Metten Fil Hort Lips* p 64

The specimen figured is from Khasya (Dr Thomson)

Hab Java, (3 1000 feet elevation) Khasya (6 000 feet elevation) Ceylon (vide p 78 " Ferns of Southern India and Ceylon")

PLATE No C LIX



Hypogramma aspidioides
(136)

13 GYMNOGRAMMÆ

(1) *Veins pinnate venules reticulated with free included veinlets*

SELLIGUCA Bory Dict Class d Hist Nat vi 587

(Diagramma Blume — Colysis Presl — Dictyogramma Presl — Grammitidis Sp Auct — Gymnogrammatis Sp Auct — Hemionitidis Sp Auct — Polypodium Sp Auct — Ceterachis Sp Auct)

Gen char Sori non indusiate oblong or linear oblique the elongate *receptacles* lying between and parallel with the primary veins Veins pinnate or sub pinnate from a central costa Venules compoundly anastomosing producing within the areoles variously directed free curved veinlets

Fronds simple, pinnatifid or palmately lobed, herbaceous or coriaceous Rhizome creeping (Moore)

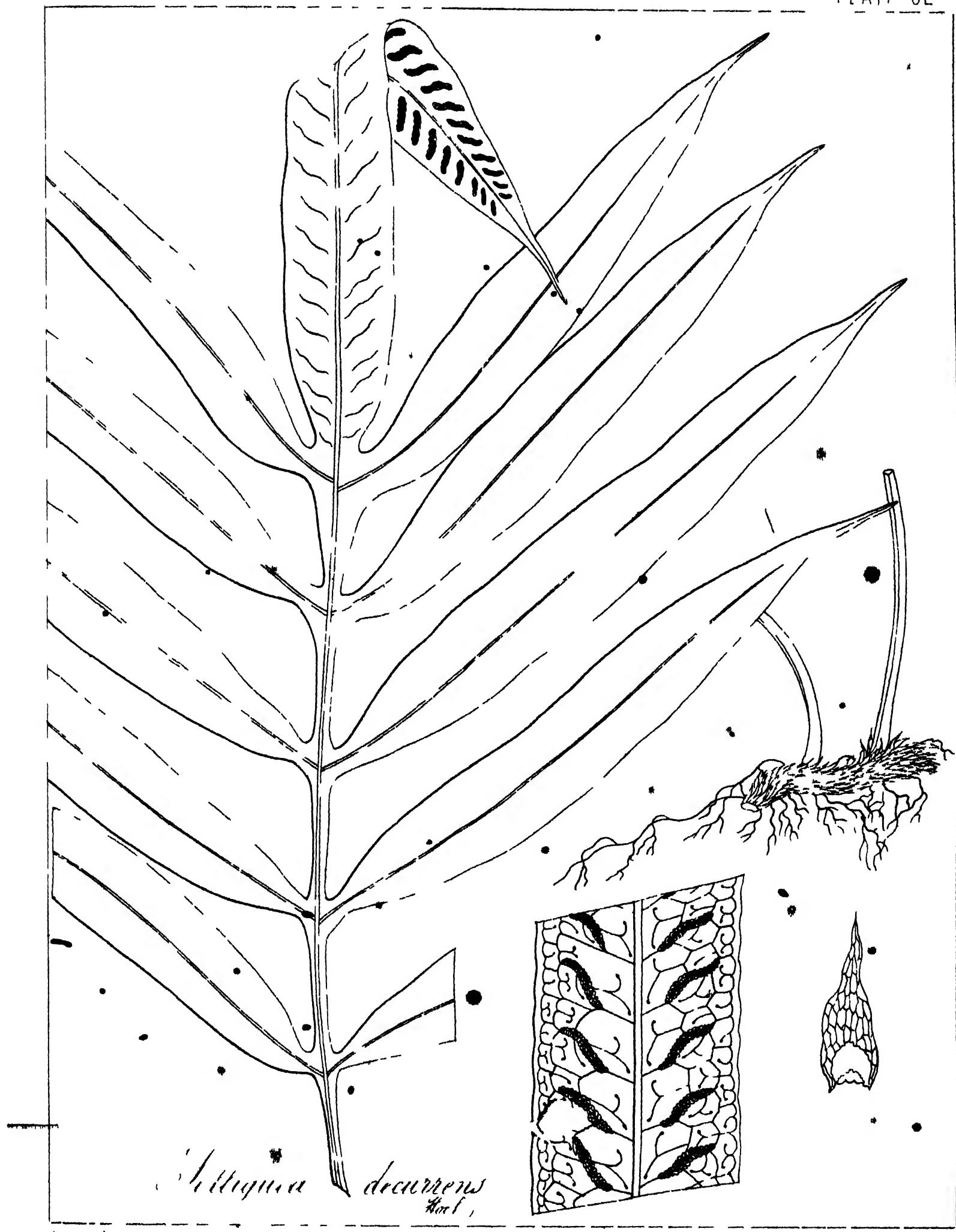
SELLIGUCA DECURRENS (Hook) Caudex creeping palaceous stipites distant 1 foot and more long stramineous brown fronds 1 1/2 foot and more long 8-10 inches broad firm membranaceous, broad ovate deeply pinnatifid or pinnated with the rachis more or less winged segments spreading 6-8 inches long 1/2 in wide linear lanceolate or broad oblong lanceolate finely acuminate subopposite and very distant generally contracted near the base then dilated above and so extending above and downward below as to form a narrow or broad wing between the segments veins sometimes slightly costuliform but usually they constitute rather large unequally sized hexagonal areoles including free clubbed veinlets sori linear obliquely patent varying much in length and in breadth commencing near the costa but never extending to the margin — Hook Sp Pl v p 161 — Grammitis decurrent Hall Cat n — Hemionitis pothifolia Don Prod Np p 13 — Colysis Pl Fpim Bot p 148 — Polypodium Mett Poly p 105

The specimen figured is from Moulmein — (Parish)

Hab Nepal, and all along the Himalayas from N W Bengal to Sikkim Photan Khanya (6000 feet elevation) Moulmein Luzon China, Loochoo, Hong Kong Formosa Japan, Nagasaki

PLATE No CI

PLATE VI



Hedysium decurrens
Hart.

